Poverty Assessment for Bangladesh:
Creating Opportunities and Bridging the East-West Divide

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LIST OF ABBREVIATIONS

ASA	Association for Social Advancement	MDGs	Millennium Development Goals
BBS	Bangladesh Bureau of Statistics	MFA	Multi Fiber Arrangement
BIDS	Bangladesh Institute of Development Studies	MFIs	Micro Finance Institutions
BRAC	Bangladesh Rural Advancement Committee	NREG	National Rural Employment Guarantee
CBN	Cost of Basic Needs	ORS	Oral Rehydration Solution
CCT	Conditional Cash Transfer	PKSF	Palli Karma Sahayak Foundation
DHS	Demographic and Health Survey	PPRC	Power and Participation Research Centre
ESP	Essential Services Package	PESP	Primary Education Stipend Project
EPI	Expanded Program on Immunization	PMT	Proxy Means Test
EPZ	Export Processing Zones	RMG	Ready-Made Garment
FDI	Foreign Direct Investment	REOPA	Rural Employment Opportunities for Public Assets
FGT	Foster Greer Thorbeck	RMP	Rural Maintenance Program
FFE	Food-For-Education program	SCUK	Save the Children UK
FFW	Food-For-Work	SNA	System of National Accounts
GIC	Growth Incidence Curve	UP	Union Parishads
HNP SIP	Health Nutrition and Population Strategic Investment Plan	VGD	Vulnerable Group Development
HIES	Household Income and Expenditure Survey	VGF	Vulnerable Group Feeding
ICA	Investment Climate Assessment	GDP	Gross Domestic Product
IGVGD	Income Generation for Vulnerable Group Development	GIS	Geographic Information Systems
IFPRI	International Food Policy Research Institute	LFS	Labor Force Survey
IR	Integrated Region	NGOs	Non Government Organizations
LIR	Less Integrated Region	WFP	World Food Program

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Preface and Acknowledgements

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Foreword

Bangladesh has made good progress in reducing poverty over the past decade despite the series of external shocks which have routinely affected the country. Poverty fell from 49 percent in 2000 to 40 percent in 2005, propelled by respectable economic growth and relatively stable inequality. These statistics are reflected in tangible improvements in poor people's lives, such as a sharp reduction in those living under flimsy straw roofs in rural areas. Unfortunately, climatic shocks such as the 2007 floods and cyclone, as well as rising food prices, have slowed the country's progress in reducing poverty. Despite these setbacks we expect that Bangladesh will reach its Millennium Development Goal (MDG) of halving the number of people living in extreme poverty by 2015.

Poverty reduction is not just about improving household income, but also about enhancing human capability. Our optimism in Bangladesh's future is also based on its significant gains in human development over the past 15 years. The country is on course to meet the Millennium Development Goals (MDGs) for infant and child mortality by 2015 and has already met the MDG of gender parity in primary and secondary schooling. That said, some of the gains in education and health outcomes have accrued to the better-off and malnutrition remains surprisingly high compared to other countries. These inequalities and the frequency of shocks against the backdrop of a large vulnerable population suggest a significant role for safety nets.

Despite its recent progress in reducing poverty, Bangladesh remains a poor country with about 56 million poor people in 2005 and continuing disparities across occupational groups, gender, and regions. Although growing regional inequality is characteristic of many developing countries experiencing rapid economic growth, Bangladesh is somewhat unique in that the natural boundaries created by its rivers limit integration between economically unequal geographic areas. Hence the title of this report: "Creating Opportunities and Bridging the East-West Divide."

This report shows that higher productivity in agriculture, job creation in urban growth poles and promoting migration will be essential for further poverty reduction across Bangladesh. Sustaining this reduction will require maintaining the progress made thus far in slowing population growth, and providing better quality options in schooling and healthcare. Another urgent priority is to better coordinate the country's existing safety net system in order to expand effective programs in line with the needs of the poor.

Putting such policy initiatives into motion so that poor people see significant improvements in their day-to-day lives will require effective implementation and cooperation across Bangladeshi society. We thus hope this report not only offers an empirically grounded study of the country's economic and social transformation in recent years but also provides concrete policy options to those who are motivated to contribute to the country's ongoing journey towards economic development.

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Executive Summary

1. **Bangladesh represents a success story among developing countries.** Poverty incidence, which was as high as 57 percent at the beginning of the 1990s, had declined to 49 percent in 2000. This trend accelerated subsequently, reducing the poverty headcount rate to 40 percent in 2005. The primary contributing factor was robust and stable economic growth along with no worsening of inequality. Respectable GDP growth that started at the beginning of the 1990s continued into the new millennium and averaged above 5 percent annually between 2000 and 2005. Inequality, as measured by the Gini coefficient of consumption, remained stable between 2000 and 2005.

2. **Recent shocks to the Bangladeshi economy in the form of natural disasters and rising food prices have partially dampened the rapid progress in reducing poverty**. The year 2007 saw two natural disasters – floods and a devastating cyclone within a few months of each other. Another significant shock has been the steep rise in food prices, including the main staple, rice, which has revealed the risk posed by global price volatility for a net food-importing country like Bangladesh. Estimates in this report suggest that the impact of the food price shock has likely negated some (but not all) of the reduction in poverty brought about by economic growth between 2005 and 2008.

3. **The average annual rate of poverty reduction in Bangladesh during 2000-2005 was the second highest among South Asian countries for a comparable period**. This was partly due to GDP growth that compared well with the region, along with stable consumption inequality. The pace of poverty reduction in Bangladesh is, however, much lower than in faster-growing East Asian countries like China, Thailand, and Vietnam, which underscores the importance of higher growth for achieving even faster reduction in poverty.[i]

4. **The reduction in consumption poverty was also accompanied by impressive gains in other indicators of wellbeing**. For example, Bangladesh is on course to meet the year 2015 Millennium Development Goals (MDGs) for infant and child mortality and has already met the MDG of gender parity in primary and secondary schooling. Impressive improvements in access to sanitation and the quality of housing since 2000, particularly in rural areas, reflect broad-based gains in standard of living for the poor.

5. **Poverty reduction from 2000 to 2005 can be attributed to a combination of factors that add up to a story of significant social and economic transformation**. The economic transformation is closely related to rapid GDP growth and the urbanization process in recent times – manifested in rising returns to human and physical assets, rising labor productivity and wages, the shift from low return agricultural labor to nonfarm employment and growth in export industries. Increasing flow of remittances has been another key factor contributing to poverty reduction. Equally important are some of the forces that have emerged from social transformations occurring over time. A fall in the number of dependents in a household, linked to past reductions in fertility, has been an important contributor in raising per capita incomes. Increases in labor force participation and educational attainment, particularly among women, have contributed as well.

6. **For all its progress, however, Bangladesh remains a poor country –** with an estimated 56 million people in poverty in 2005 and disparities in incomes and human capabilities across income and occupational groups, gender, and regions. Underlying the national poverty story are vast differences between regions. Dhaka, Chittagong, and Sylhet divisions in the eastern part of the country experienced rapid poverty reduction. In the West, meanwhile, gains were much

smaller for Rajshahi and nonexistent for Barisal and Khulna. Recent shocks – natural disasters and food price rises – have also highlighted vulnerabilities with likely adverse impacts on poverty, at least in the short run. Sustaining and improving the pace of poverty reduction and human development, addressing the constraints faced by economically lagging regions and cushioning the impact of shocks therefore remain enduring challenges.

7. **A significant finding of the report is the changing pattern of regional inequality.** While regional inequality in income/consumption in Bangladesh has been historically significant until the early 1990s, it was induced mainly by large differences between the greater Dhaka region and the rest of the country.[ii] Recent years, in contrast, have seen a growing divergence between the eastern and western parts of the country. Between 2000 and 2005, while most regions in the East have moved closer to the greater Dhaka region in terms of incomes and poverty, the West has been increasingly lagging behind.

8. **There is evidence to suggest that the eastern region has increasingly benefited from integration with growth poles**, namely Dhaka and Chittagong, in contrast to the more isolated West and Southwest. Two large rivers crisscrossing the country appear to act as natural boundaries between these two parts of the country by imposing a strong barrier to connectivity. In addition, a combination of factors contribute to stagnant incomes in lagging regions – the relative lack of remittance income, inadequate public infrastructure like electricity and roads to markets, the lack of growth poles within these regions, and deficiencies in assets and endowments among households.

9. **Growing inequality among regions is a feature in many developing countries experiencing rapid gains in income and poverty**. In South Asia, rising regional gaps have been observed in countries like India, Sri Lanka, and Pakistan. The pattern of spatial differences in India and Pakistan – much larger countries with multiple urban growth centers – are very different from those in Bangladesh.[iii] But there are similarities between Sri Lanka and Bangladesh, most importantly in the divergence between the geographic areas integrated with the capital city and the rest of the country. The Bangladeshi story, however, appears to have at least one unique aspect among South Asian countries: the natural boundaries created by rivers playing a key role in limiting the integration of certain geographic areas with growing areas.

10. **In addition to the structural causes of poverty, recurring community-wide shocks have a significant accumulated impact**. Some of these are seasonal, while others are more unpredictable, like the major floods and tropical cyclone that occurred in 2007. There is some evidence to suggest that severe and repeated community-wide shocks contribute to poverty traps in certain areas of the country. The recent steep rise in rice prices, while benefiting a relatively small group of (larger) farmers, has had an especially severe impact on the poorest households. The frequency and severity of such large shocks calls for safety nets programs to play a critical role. By (at least partly) mitigating the impact of the shocks, a well-functioning safety net system would ensure that the considerable gains Bangladesh has achieved through rapid economic and social transformation are not eroded.

11. **Specific areas for policy focus which are elaborated in the report include measures to**: (i) promote growth by sustaining increases in labor productivity and job creation in manufacturing and services; (ii) expand opportunities in lagging regions by improving connectivity with growth poles and investing in human capital; (iii) facilitate migration from poor areas given the poverty-reducing impact of remittances; (iv) stimulate women's participation in the labor force (v) sustain Bangladesh's past successes in reducing fertility; (vi) improve poor

households access to and quality of education, health and nutrition services; (vii) strengthen the coordination, targeting and coverage of safety net programs.

I. Poverty, growth, and inequality in recent years

12. The last two rounds of Household Income and Expenditure Surveys (HIES) show that the percentage of population with per capita consumption below the *upper* poverty line declined by 18 percent during 2000-2005, while that below the *lower poverty line* (the threshold for extreme poverty) declined by 27 percent (from 34 to 25 percent) (Table 1). While the rural-urban gap narrowed, the rural poverty rate in 2005 was still more than one and a half times the urban rate.

Table 1: Poverty Headcount Rates (%)

	Upper PLs		*Lower PLs*	
	2000	*2005*	*2000*	*2005*
National	48.9	40.0	34.3	25.1
Urban	35.2	28.4	19.9	14.6
Rural	52.3	43.8	37.9	28.6

Source: HIES 2000 and 2005; using poverty lines estimated with HIES (2005) and deflated to adjust for inflation during 2000-05

13. **The fall in poverty headcount rates was significantly more than population growth during 2000-2005 leading to a decline in the number of poor people**. The size of the population below the upper poverty and the lower poverty lines declined by nearly 6 million and 8.3 million respectively. The levels and distribution of consumption among the poor improved as well, as evident from reductions in poverty gap and squared poverty gap measures by 30 and 37 percent respectively.

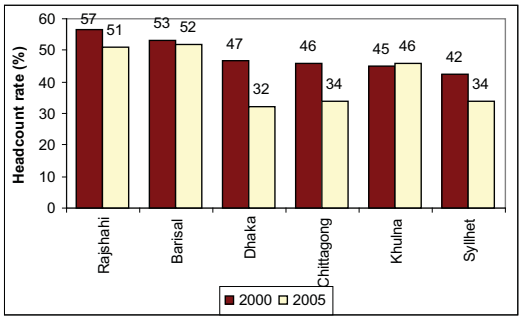
14. **Growth in consumption, fueled by robust GDP growth, was the dominant force in reducing poverty.** Real per capita consumption expenditure from HIES increased at an average annual rate of 2.3 percent, with a higher increase for rural than urban areas. The National Income Accounts shows that the growth of private consumption per capita was the highest during 2000-2005. Decompositions of changes in poverty indicate that consumption growth (from HIES) accounted for nearly all the reduction in national poverty headcount.

15. **Consumption growth occurred at similar rates across the board, resulting in stable relative inequality** as measured by the national Gini index of per capita real consumption (which remained at 0.31 from 2000 to 2005). However, similar consumption growth rates for the rich and poor alike imply an increase in the *size* of the rich-poor gaps. The *absolute* Gini index of per capita real consumption increased by 13 percent between 2000 and 2005 for the national population.[iv]

16. **Bangladesh is on track to achieve the MDG of halving poverty from the 1990 level.** If GDP were to continue growing at the same average rate as between 2000 and 2005 (5.3 percent per year), Bangladesh would meet the MDG target of halving poverty and extreme poverty rates between 1990 and 2015. However, since these projections depend on estimates of elasticity extrapolated from historical data, they are imperfect guides for the future, and the actual poverty impact of growth would depend on how distributional changes evolve over time. Realizing these projections would also depend on the country being able to sustain its recent trends in reducing fertility and population growth. Severe shocks, like the recent rise in food prices, could also erode some of the gains from economic growth and slow the pace of poverty reduction. The frequency of such shocks, how long they last and how rapidly the economy bounces back from them will therefore influence the future pace of poverty reduction.

17. **There are sharp variations in the rate of poverty reduction across regions**, with the eastern part of the country far outpacing the West and southwest. The largest decline in poverty occurred for Dhaka, Chittagong, and Sylhet divisions, while Barisal and Khulna saw little change (Figure 1). Dhaka and Chittagong divisions, with just over half the country's population in 2000, contributed 79 percent of the reduction in national poverty. All divisions with high consumption growth also saw substantial reductions in poverty and there was no apparent association between growth and distributional changes.

Figure 1: Poverty headcount trends for divisions



Source: HIES (2000, 2005)

II. Linking growth and poverty: the role of the labor market

18. **Economic growth in Bangladesh has been driven primarily by factor accumulation – of both labor and capital**. With public investment remaining almost unchanged as a share of GDP, private investment has enabled capital accumulation, which has in turn improved labor productivity, raising real wages and household incomes.

19. **Labor force participation rates remained steady between 2000 and 2005 at about half the working age population, which is low by world standards.** The participation rate was just above 10 percent for women compared to above 80 percent for men (HIES 2005). While the last two rounds of Labor Force Survey show a higher female participation rate, this was still low by international standards.[v] About 5.6 million new jobs were created – just enough to maintain an unchanged employment rate given the number of new entrants into the labor market during 2000-2005.

20. **Between 2000 and 2005, important structural changes occurred in the labor market.** *Firstly*, the share of agriculture in total employment declined – agricultural employment grew at 0.7 percent per year compared to 5 and 2.8 percent for services and manufacturing respectively. *Secondly*, there was a movement away from low productivity jobs in agriculture to more productive jobs, and especially to salaried employment in the private sector. *Thirdly*, there was a strong rural-urban shift in employment – consistent with a similar shift in population share that actually accounted for almost 9 percent of the total change in poverty between 2000 and 2005.[vi] These trends are consistent with the shrinking share of agriculture in GDP while the share of services and industry are increasing. Despite slow growth, the contribution of agriculture to poverty reduction was significant because of the size of the sector, which also made for a large contribution of rural areas.

21. **Demographic transition is a key force shaping the labor market, creating opportunities as well as challenges**. Although population growth has recently moderated to about 1.5 percent per year, the working age population has been expanding at 2.5-2.8 percent into the 2000s. A potential asset for income generation and growth, this also creates a major challenge for the labor market as an estimated 22 million new entrants between 2005 and 2015 will need to be absorbed.

22. **Poverty is most prevalent among daily agricultural wage workers and subsistence farmers** while the better-off tend to be engaged in salaried employment or nonfarm self-employment. *Daily wage labor* accounts for a third of all workers and is characterized by low

wages, especially in agriculture. Among *salaried workers* (about 20 percent of all employed), those working for government or community organizations have relatively higher education and earnings than those in the private sector.

23. **Women are playing an increasingly important role in the Bangladesh labor market**. Women's participation rates, employment, working hours, level of education, and income have all increased much more than those of men between 2000 and 2005. Women's earnings from salaried employment increased by about 60 percent in 5 years, with changes in education level accounting for a substantial part of the change. However, the labor market continues to be highly segmented along gender lines. Women's participation in wage work is extremely low, and women are also significantly less likely than men to be self-employed in nonfarm activities. While women earn significantly less than men at the same type of job, the gender gap narrowed between 2000 and 2005, although mainly for better-off, salaried workers. Overall, the growth in women's participation and incomes has been largely concentrated in the middle and higher end of the income distribution.

24. **Wage growth and labor productivity increases played a key role in poverty reduction between 2000 and 2005.** Ninety percent of the growth in real income per capita is attributable to wage growth and the rest to an increase in the share of working age population in total population. Growth in real wages was evenly spread across the wage distribution, which is consistent with relative inequality in consumption remaining stable from 2000 to 2005. Wages in salaried employment in the private sector had the highest growth, and among economic sectors, wage growth was most significant in the services. Consistent with rising wages, increase in labor productivity accounted for a major share of the growth in GDP per capita, while an almost unchanged employment rate had no contribution. About half of the productivity increase is attributable to inter-sectoral mobility of workers – related to outflows from low-productivity daily wage jobs in agriculture and expansion of private sector salaried employment. Productivity growth was strong in manufacturing but job creation was slow, which is an important reason why growth in overall employment just about kept pace with that of the working age population.

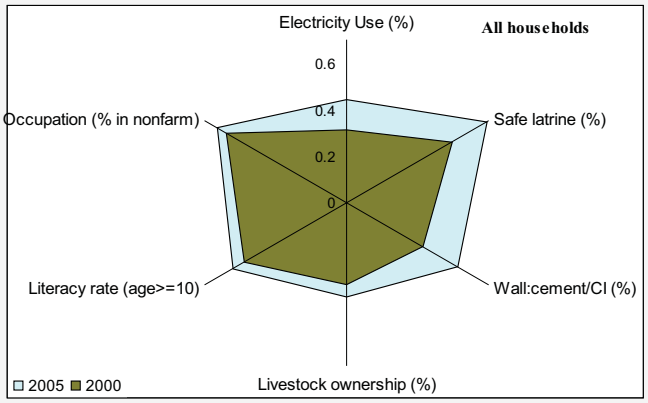
25. **Differences in wage growth and job-creation patterns help explain the widening East-West gap in poverty.** Wages grew robustly in the eastern part of the country but stagnated in the West. While both East and West created employment to match the rise in working age population, the East created many more jobs that are more stable (salaried), better paid, and in a robustly growing nonfarm sector. In contrast, a large proportion of jobs created in the West consisted of daily wage work or agricultural self-employment. A smaller and declining urban premium for wages in the West suggests weaker agglomeration effects – likely related to the absence of urban growth poles and poor connectivity to markets.

III. A profile of the poor: characteristics and determinants

26. **Most non-consumption indicators of welfare showed significant improvements between 2000 and 2005** (Figure 2). A sharp improvement in most welfare indicators was a feature for the population as a whole but especially so for extreme poor households. For instance, housing conditions improved especially in rural areas, with a larger percentage of households having walls and roofs of corrugated iron sheets or cement as opposed to straw. Similarly, the poor made rapid gains in access to sanitation. However, notwithstanding these improvements, large gaps between the poor and non-poor remain for most indicators.

27. **The poor in Bangladesh have several distinct characteristics.** The likelihood of poverty is higher when a household has a larger number of *dependents, has low levels of education*, or when the household is headed by a female whose husband does not send remittances. A household whose head is engaged in *daily wage work* is significantly more likely to be poor compared to all others. For rural households, *ownership of agricultural land* raises household per capita consumption progressively with land size. Urban households are likely to be better-off if the head is engaged in *nonfarm self-employment* or if they own *some form of business.*

Figure 2: Improvements in non-expenditure welfare indicators of households: 2000-2005



Note: The boundaries of the hexagon for 2005 lie outside those for 2000, which indicates improvements along all 6 dimensions.
Source: HIES (2000, 2005)

28. **The rapid growth of international remittances (20 percent annually during 2000-2005) played its part in poverty reduction,** primarily in regions like Sylhet and Chittagong**.** The poverty rate among households receiving remittances from abroad is 17 percent compared to 42 percent among the rest. There are stark geographic disparities: in 2005, 24 percent of households in Chittagong division and 16 percent in Sylhet received remittances, compared to less than 5 percent in Rajshahi, Khulna, and Barisal. Simulations with a computable general equilibrium model (CGE) attribute a little above 15 percent of the poverty decline to the effect of growth of foreign remittances during this period.[vii]

29. **Microfinance membership expansion at the *thana* level and household consumption levels are found to be positively correlated.** While the HIES data limits the scope for analyzing the impact of microfinance on household welfare, a number of studies using smaller data sets have found significant positive impacts of microfinance membership on various dimensions of household welfare that are consistent with the positive correlations in this report.

30. **Poverty reduction during 2000-2005 occurred partly due to substantial improvements in key household attributes**, with even the poorest of all households experiencing some of these gains. These include changes in household characteristics like demographics and education attainments. The average household size fell sharply, mainly due to a decline in the number of children, which reduced the dependency ratio. The proportion of household heads with secondary education levels or above rose from 27 to 31 percent.

31. **Increases in *returns* to attributes like occupations and assets also contributed significantly to poverty reduction**, implying that households were able to get more out of their *existing* endowments and occupations. Returns to agricultural labor, farming, and land ownership improved significantly for rural households, as did returns to non-agricultural daily labor and self-employment for urban households. The findings are consistent with rising labor productivity and earnings being important drivers of poverty reduction (see section II above), which in turn suggest an improvement in the general economic environment.

IV. Regional inequality: the "East-West economic divide"

32. **The geographic location of a household clearly influences its likelihood of being poor**. Location outside Dhaka district (by the "old" classification of 17 districts) is disadvantageous for a household even after controlling for the effect of household attributes. But since the early-1990s, and especially between 2000 and 2005, the gap with Dhaka has shrunk for most regions in the East but not for the West. Between 2000 and 2005, the HIES samples from most of the eastern districts showed significant reduction in poverty, with the highest reductions occurring in districts that were among the poorest in 2000.[viii] In contrast, almost all western districts have had much smaller (or no) reductions with no pattern of convergence.

33. **Remoteness from local markets and Dhaka city, and lack of infrastructure (like electricity) are characteristics of poor areas** that partly explain why location matters for household welfare. These characteristics also tend to occur together, which suggest that only certain areas in the country are likely to possess the combination of factors necessary to attract high-return economic activities.

34. **Two metropolitan cities have emerged as the main centers of economic activity of the country** – Dhaka with a population of 10 million and to a lesser extent, Chittagong, the main port city, with a population of 3.4 million. Dhaka alone accounts for 80 percent of the country's Ready Made Garments output and half of manufacturing sector employment. A large increase in formal sector employment between 2003 and 2006 in the greater Dhaka region, relative to the rest of the country, suggests that agglomeration has *increased* in recent years.[ix] However, even as concentration has increased in the greater Dhaka region, there is a growing trend of dispersion *within* this region – from the core of the city to outlying areas of Dhaka city, particularly to the north and west.

35. **The two major rivers, Ganges and Brahmaputra, create significant barriers to the connectivity of the West to the growth poles**. Thus territories to the east of the rivers are defined as the integrated region (IR) – covering the divisions of Chittagong, Sylhet, and most of Dhaka. Areas to the west of Brahmaputra (Rajshahi Division) and south of Ganges (Barisal and Khulna divisions, and the greater Faridpur districts in Dhaka division), which are separated from Dhaka and Chittagong by one of the two rivers, are defined as the less integrated region (LIR). The IR-LIR distinction almost coincides with the so-called East-West divide– with the only exception of greater Faridpur district, which was considered a part of "East" earlier.

36. **The natural barriers imposed by the river seem to matter –** while the urban-rural gap in average per capita consumption has declined between 2000 and 2005, the IR-LIR gap has increased. Moreover, the *poor* households in IR experienced a much higher consumption growth compared with those in LIR. The widening gap is partly due to physical and human endowments improving more in IR than LIR. In addition, households in LIR make substantially lower *returns* on their endowments compared to those belonging to the same expenditure quantile in IR; and between 2000 and 2005 this returns gap has *increased* for the bottom 40 percent.

37. **An analysis of the endowment and return gaps suggests the following stylized story on the divergence between the East and West (or IR and LIR).** Increasing agglomeration of high-return economic activities at the major growth centers have led to strong spillover effects, higher incomes, and narrowing of urban-rural differences within the eastern part of the country. In the greater Dhaka region, growth has been increasingly dispersed outward from the main city – due to a combination of increasing agglomeration costs in the main city and spillovers to surrounding markets – which has also helped to reduce the urban-rural gap within the eastern

region. On the other hand, East-West differences in income and poverty have expanded on account of the western region being handicapped by the absence of growth poles, poor connectivity with urban centers in the East, and deficient public infrastructure and markets. These factors have led to higher wage growth and higher-return job creation in the East compared to the West (see section II). While the better-endowed households from the West can respond to the economic opportunities in the East by migrating, the poor are mostly unable to overcome barriers to their mobility. Thus the differences in returns to endowments between the eastern and western parts of the country are especially high for the poor and increasing over time. The geographically skewed distribution of remittances is also a key factor behind the divergence across the 'two halves' of Bangladesh.

V. Improvements in human capability

38. **In keeping with its progress in reducing income poverty, Bangladesh has seen rapid gains in a number of key education and health outcomes**. The country is well on the way to achieving its MDGs for outcomes like infant and child mortality and has already met the MDG of gender parity in primary and secondary schooling.[x] Nevertheless, a number of obstacles remain in achieving access to education and health services for the poor, as inequalities in opportunities and outcomes persist across different wealth and income groups, gender, and regions. As seen earlier, education improves nonfarm employment opportunities, increases earnings of workers, and enhances the mobility of the poor from lagging regions. Poor health contributes to a vicious cycle of poverty, malnutrition and higher morbidity, which often leads to families remaining poor across generations. Most importantly, better education and health are critical objectives in themselves, with interrelated effects on other development outcomes.

39. **There is clear evidence of persisting and, in some cases, increasing inequalities in access to health and education.** For example, data from Demographic and Health Surveys (DHS) show that although childhood immunization coverage has gone up, the increase occurred primarily among better-off households. A lack of adequate care during child delivery continues to be a challenge across all wealth quintiles, but especially so for the poor, with poor women's access to such services showing very little change from 1996-1997 to 2004. A gender gap is also evident in provider choice for child treatment, with girls more likely to receive treatment from public sector providers than from private providers. On the positive side, vitamin A supplementation to children under 5 saw both an increase in coverage and a decline in inequality.

40. **Malnutrition indicators have improved but remain high compared to other countries and for the poor in particular.** Malnutrition remains higher than many African countries with comparable per capita incomes. Improvements in feeding practices – specifically 'timely complementary feeding' – have contributed to a reduction in the proportion of the population that is underweight, from 56 percent in 1996 to 47 percent in 2004. However, better-off households have tended to benefit from gains in nutrition to a greater extent than poor households. Absolute inequality also increased between girls and boys in terms of nutrition indicators. Malnutrition needs to be redressed before a child has reached the age of two in order to avoid permanent negative health consequences. The current rise in food prices is likely to reverse some of the gains made thus far in tackling this problem.

41. **There has been mixed progress in education outcomes since 2000**. There was little change in primary gross enrolment since a 90 percent enrolment rate was already attained in 2000. There was substantial growth in gross secondary enrolment, although this was accompanied by declining completion rates. The rich-poor gap in attainment is wider for higher levels of education, due to the rising costs of moving up in the educational system and the higher

opportunity cost for poor children going to school in lieu of working to supplement household incomes. On the whole, boys from poor households appear to be getting left behind in the gains that the country has made in educational attainment, compared to girls in poor households and boys in better-off households.

42. **Per capita public expenditure on both education and health is relatively low and the extent to which spending reaches the poor varies by the type of service**. Comparisons with neighboring countries and others at similar stages of development show that per capita education spending is relatively low in Bangladesh. Moreover, targeting of both primary and secondary spending, including two significant conditional cash transfer programs, can be significantly improved to benefit the poor. Similarly, analysis of public spending on health suggests that expenditures are low relative to other countries. Spending on family planning, communicable diseases, and maternal health are almost distribution-neutral, while the incidence of spending on adult curative care favors the non-poor.[xi]

43. **The quality of public service provision appears to be low in both health and education, which is likely to disproportionately affect the poor.** High rates of absenteeism are found in public health care, with facilities in rural areas – that are likely to serve large numbers of the poor – bearing the brunt of the problem.[xii] In education, high private expenditures, particularly for secondary level and above, indicate an increasing demand for private school and tuition services. Large differences in private spending between the poor and non-poor contribute to rich-poor gaps in education outcomes. Additionally, the recent rise in food prices may have compelled households, particularly the poor, to further reduce their spending on education.

44. **Regional variations in both education and health outcomes show that districts with higher poverty rates, ironically, tend to have better outcomes**. Some indicators of human capital (e.g. number of years of schooling in the working age population) did seem to *grow* faster in the East than in the West from 2000 to 2005. Even so, the spatial pattern of education and health outcomes is not easy to explain, particularly in the context of faster poverty reduction and accelerated progress in human development for the country as a whole. Some factors may help resolve this puzzle, such as possible differences in social norms between different parts of the country (e.g. greater conservatism in Sylhet limiting female gains in human development). Given the limitations of HIES data, these questions call for more detailed analysis using alternate data sources.

VI. Vulnerability to shocks and the role of safety nets

45. **A large concentration of population within a relatively narrow band of consumption around the poverty line** suggests that many in Bangladesh are vulnerable to falling into poverty as a result of even a small shock. For example, a 5 percent shock to consumption, distributed equally throughout the population, would increase the share of the population below the lower and upper poverty lines by 11 and 16 percent respectively. A shock that disproportionately affects the lower part of the distribution would have an even larger impact on poverty.

46. **An example of such a shock is the recent steep rise in rice prices** of nearly 40 percent between April 2007 and March 2008. A survey conducted by the World Bank in July 2008 found that a significant majority of households have had to respond to the price shock by cutting back on their food intake, consuming lower quality food, or reducing spending on non-food items. According to the HIES, the share of rice in a household budget averages around 24 percent for an average Bangladeshi household and significantly higher for the extreme poor. Since nominal wages are slow to adjust and more than 80 percent of households are net buyers of rice, increases

in rice prices are likely to have a significant adverse impact on real incomes. Assuming a uniform 5 percent wage increase for all, a 3 percent real income loss for the average household is estimated, which translates to a roughly 3 percentage point increase in the poverty rate.

47. **The magnitude of the impact implies that the food price shock is likely to have negated some (but not all) of the reduction in poverty** achieved between 2005 and 2008 due to strong and stable economic growth.[xiii] More important than the aggregate poverty impact of the price shock is its role in worsening the income or consumption distribution. The adverse impact is much higher for households that were already poor than for those who were better-off, and for vulnerable groups like daily wage workers and subsistence farmers compared to others. Those likely to benefit are farmers with more than 1.5 acres of land, who constitute less than a quarter of all households.

48. **Among household-specific sources of shock, health shocks, especially among income earners, are particularly important contributors to poverty.** Households with lower endowments (in terms of education, land ownership or asset ownership) and households with poorer demographic attributes are likely to be more vulnerable to certain types of shocks. Sudden illnesses lead to poverty due to lack of earnings and expensive medical treatment. Moreover, economic shocks such as the recent rise in food prices makes poor households switch to cheaper, less nutritious food items and contributes to malnutrition and ill health.

49. **Bangladesh also suffers from recurring community-wide and external shocks.** Large areas in the northwest are subject to a seasonal phenomenon called *Monga*, which occurs during the lean agricultural season in October and November every year and contributes to high chronic poverty. Other shocks are more unpredictable, like the 2007 floods that affected 46 of the country's 64 districts and Cyclone Sidr in the same year that devastated parts of Barisal and Khulna divisions. There is some evidence that the areas at a high risk of natural disasters are also more likely to be poor and have lower access to markets and infrastructure – conditions that are likely to exacerbate the impact of a natural disaster and contribute to poverty traps.

50. **Given the high incidence of shocks and the large vulnerable population, safety net programs have an important role to play.** Such programs transfer resources directly as a source of income for the extreme poor; they mitigate the risk of households falling further into poverty as a result of a shock and have the potential to enhance human capital gains when linked to education and health programs. The government has raised safety net expenditures steadily since the mid-1990s, funding a wide spectrum of programs – a mix of conditional and unconditional cash and food transfers, subsidies, and targeted assistance to specific groups. A dominant share of resources is spent on unconditional programs, out of which in-kind (food) transfers constitute the largest part. A small share of in-kind transfer programs provide food fortified with essential nutrients. One of the major programs used to respond to the recent food price crisis was distribution of subsidized coarse rice rations in government markets.

51. **Evidence suggests that safety net programs are still inadequate to address the vast needs of the poor.** Only about 13 percent of households (including 23 percent of the poorest 10 percent) benefit from at least one safety net program. The benefit amounts are small – for example, the food benefit from VGF is just 21 percent of the lower poverty line. Targeting errors compound the problem of low coverage among the poor; for example, the poorest divisions have much lower proportion of population covered by safety nets than do better-off areas such as Sylhet. A lack of safety net coverage in urban areas is a critical gap in the system. Moreover, multiple implementing agencies undertake programs in a largely uncoordinated manner, thereby limiting the ability to make strategic choices with budgetary resources.

VII. The road ahead: implications for a poverty reduction strategy

52. **Future gains in reducing poverty will require productivity growth in agriculture and job creation in the industrial and services sectors**. In particular, manufacturing employment would need to expand faster than during 2000-2005 to absorb the large number of estimated new entrants in the labor market expected by 2015. Improving labor productivity in agriculture would be important to raise earnings of agricultural wage workers and subsistence farmers. Promoting diversification into higher value-added crops, greater mechanization, and timely dissemination of new technology can raise agricultural productivity and incomes. Accelerating private sector, export-led growth would require a policy environment that improves returns to investments – including a stable macroeconomic environment, infrastructure improvements, and rule of law. Policies to raise women's employment and incomes can have significant dividends in terms of household income and poverty, given the vast potential that remains untapped due to the low participation of women in the workforce. Specific areas for policy focus could include better enforcement of existing laws, continued focus on higher education for women, and creation of support systems to facilitate women's participation in the labor force.[xiv]

53. **Sustaining the reduction in poverty will require slowing population growth rates and providing better quality options in schooling and health care.** Investments in future generations will create the conditions for higher growth and poverty reduction in the long run. Building human capacity among the poor remains a key priority in order for the poor to shift to occupations with higher returns. Public education expenditures ought to be raised in line with countries at similar stages of development. These additional resources could be spent on raising the quality of public schooling, which would help reduce the rich-poor gaps in education outcomes. In health, demand-side interventions targeted to the poor such as vouchers and conditional cash transfer programs – that provide greater incentives for households to seek care – can be considered for reducing the rich-poor and regional disparities. Sustaining Bangladesh's past successes in reducing fertility will be critical – given that demographic dividends played a key role in reducing poverty between 2000 and 2005. Hence sustaining past successes in partnering with NGOs in the area of population control is crucial.

54. **Rapid urbanization in Bangladesh creates opportunities for growth and poverty reduction**, as is apparent in the eastern part of the country. To gain the most out of this process, urban policy would need to induce improvements in: (a) basic infrastructure and services in the largest cities in the East to reduce agglomeration costs; and (b) growth prospects of smaller towns/cities, particularly in lagging regions, so that they emerge as alternate growth centers. Coordination between urban policies at various levels and strengthening of urban municipal government can help address these two objectives simultaneously.

55. **Narrowing the economic gap between integrated and less integrated or lagging regions would require improving endowments *and* returns to the endowments in lagging regions**. Investments to improve human capital of the poor in lagging regions would enable them to access better opportunities in growing regions and improving credit access to household enterprises would raise productive investment. Raising the returns to endowments involves improving the investment climate for nonfarm enterprises in lagging regions, for which enhancing of the availability and quality of infrastructure, including roads and electricity, would be key.

56. **Investments in interregional transport infrastructure and spatially targeted incentives can improve returns to endowments and facilitate migration to growth centers**. Improving connectivity of remote areas with Dhaka and local markets would generate economic benefits in lagging regions. More specifically, improving connectivity across the large river dividing the

Southwest and the East is likely to have a large impact, as the Jamuna Bridge seems to have had by connecting the Northwest to the East. Special Economic Zones (SEZs) can stimulate growth in lagging regions if the supporting infrastructure (particularly power) can be made available. New programs such as PKSF's international migration credit facility for poor households in lagging areas may become the catalyst for significantly higher remittance flows to the western part of Bangladesh.

57. In prioritizing/sequencing across different types of interventions for lagging regions, it is useful to distinguish between policies likely to yield rapid returns and those with longer-run benefits. Investments in public infrastructure are likely to induce relatively rapid economic gains in lagging regions. Efforts to improve human capital would yield longer-run dividends in the form of higher mobility across regions and sectors among the poor and better growth prospects for lagging regions. Depending on the type of intervention and the area targeted, spatially targeted programs can produce short- or long-run benefits. In sequencing, complementarities and synergies across interventions also need to be taken into account. For example, conditional cash transfer programs in lagging regions can serve the objective of long-term human development *and* addressing the immediate need for social protection. At the same time, investing in human development in lagging regions may not yield desired results without complementary improvements in infrastructure to spur the nonfarm sector and improve returns to education.

58. **An urgent priority should also be to make the *existing* safety net system more coordinated and strategic**. To this end, some key steps would be: (a) improving coordination among overlapping programs administered by multiple Ministries by, for instance, establishing a national umbrella body; (b) developing key strategic objectives, including identifying priority areas and households groups, and (c) building capacity for program administration among local governments. The resources saved due to higher efficiency and the newly proposed programs could then be used to fill some of the critical gaps in the system, such as the lack of coverage among the urban poor and low coverage among the poor in lagging regions. Safety net interventions can be linked with the longer-term objectives of income generation and human development. Linking safety nets with measures to improve the access of the poor to livelihood-enhancing assets is likely to induce sustainable increases in income. Increased use of conditional cash transfers can enhance the linkages between safety nets and human development, particularly for urban areas and lagging regions. Raising the share of fortified food in in-kind transfer programs can help meet the twin goals of income support and nutritional supplementation. Spurred by the recent food crisis, the Philippines is currently in the midst of such a comprehensive reform of the national safety net system.

59. **The themes presented in this report could form the basis of a nationally owned development strategy**. Much of the poverty reduction achieved in Bangladesh during 2000-2005 is linked to strong and stable economic growth, which has appreciably raised the returns to physical and human endowments. Continued poverty reduction would require sustaining this process and spreading it to lagging regions and sectors of the country. Investments in ensuring access by the poor and the quality of education and health services will stimulate growth and build a more equitable Bangladesh. Improving the coverage and effectiveness of social safety net programs needs to be an urgent priority as well, since the accumulated impact of repeated shocks can significantly erode the gains from economic growth. Translating these ideas into tangible improvements in poor peoples' lives will require effective implementation of policies and programs. This remains a shared responsibility of society at large, including the Government, civil society, the private sector and development partners.

[i] Cross-country comparisons of poverty incidence are, however, indicative at best – every country uses a different national poverty line and countries conduct their household surveys in different years.

[ii] See, for instance, Ravallion and Wodon (1999), World Bank (2002).

[iii] One important difference is that in India and Pakistan, economically lagging regions can be found scattered in many different parts of these countries – in contrast to a relatively clear distinction in the cases of Sri Lanka and Bangladesh between the dynamic region surrounding the capital cities and far-flung areas.

[iv] The absolute Gini Index depends just on the size of rich-poor gaps in consumption, while the relative Gini index measures the gaps relative to the mean of the distribution. While the absolute index is closer to a layman's perception of inequality, the relative index is more meaningful for comparisons over time when the average levels of consumption can change significantly.

[v] The female labor force participation rate from Labor Force Surveys (LFS) was reported as 26 percent in 2002/2003 and 24 percent in 1999/2000 (World Bank, 2007c). The LFS-HIES difference may be partly due to the fact that HIES may not account fully for female unpaid work in crop and non-crop production, cottage industries, small trade, and farming. Almost half of the women counted as economically active in LFS are unpaid family workers.

[vi] There was a 23 percent increase in urban share of the population from 2000 to 2005, continuing a historical trend – the urban population share increased by 22 percent from 1995-1996 to 2000 and by 15 percent from 1991-1992 to 1995-1996.

[vii] The inflow of remittances in Bangladesh increased from $1.9 billion in 2000 to $3.8 billion in 2005 (around 20 percent annually), while RMG exports grew from $4.8 billion to $6.9 billion (9 percent annually).

[viii] Since the survey is not designed to be representative at the (old) district level, these results should be seen as applying to the HIES sample for each district, rather than its population.

[ix] From Economic Census (2003, 2006).

[x] World Bank (2007c) "To the MDGs and Beyond: Accountability and Institutional Innovation in Bangladesh."

[xi] Wagstaff (2003).

[xii] Chaudhury and Hammer (2003).

[xiii] Given that GDP grew at around 6 percent annually during 2005-2008, the poverty rate would have been expected to decline by around 5 percentage points between 2005 and 2008 (using the elasticity of poverty reduction to growth estimated in chapter 1 of this report) as a normal response to GDP growth. But with the impact of the food price shock (equivalent to 3 percentage point increase in poverty rate) factored in, the poverty rate would have declined by roughly 2 percentage points over the same period.

[xiv] Also see World Bank country gender assessment for Bangladesh (World Bank, 2008d).

1. Poverty, Growth, and Inequality

1. Bangladesh has been successful in achieving significant poverty reduction since 1990, as successive rounds of Household Income and Expenditure Surveys (HIES) conducted by the Bangladesh Bureau of Statistics (BBS) have shown. This chapter will focus on changes in poverty incidence between 2000 and 2005 (the last two rounds of the HIES), and bring out the relationship between changes in poverty, consumption growth, and distributional changes – nationally as well as for urban/rural sectors and regions within the country.

2. The main source of information for this chapter and indeed most of the report is HIES – the official nationally representative source for measuring consumption poverty in Bangladesh – that necessarily limits the time horizon for the analysis to the period up to 2005. Since the underlying factors determining poverty tend to change slowly over time, analysis of the period until 2005 is valuable in identifying the pathways to poverty reduction and policies that can make a difference.

3. At the same time, it is important to recognize that a series of shocks affected Bangladesh in 2007-2008, including two natural disasters and commodity price shocks in the international market, which have strained the government's finances, slowed growth, and affected income distribution by disproportionately affecting certain geographic areas and groups. These events are likely to have reduced the rate of poverty reduction in 2007 well below what would be expected during a "normal" year in Bangladesh. While the extent of poverty impact cannot be estimated yet with any degree of accuracy, section II of this chapter and a subsequent chapter will speculate briefly on its magnitude and distribution, extrapolating from the information in surveys up to 2005. As the Bangladeshi economy adjusts to or rebounds from shocks, as it has on numerous occasions in the past, the findings of this report can help understand how future economic growth translates into welfare gains among different groups, sectors, and regions.

4. Section I below presents the poverty trends at the national, rural, and urban levels, how these relate to growth and distributional changes, and how they compare with the experiences of other developing countries. Section II presents results from projecting poverty trends under different GDP growth scenarios, given the historical relationship between poverty reduction, inequality and growth seen in Bangladesh during the last 15 years. Section III focuses on the regional pattern of poverty reduction – how the regional differences compare between 2000 and 2005, and how these patterns are in turn linked to growth and inequality changes in specific regions.

I. Poverty, growth, and inequality in recent years

5. Poverty headcount rates based on both upper and lower poverty lines using the Cost of Basic Needs (CBN) method (see Box 1.1) show that the proportion of poor in the population declined significantly between 2000 and 2005. Moreover, the improvements were not limited to reductions in the *proportion* of poor in the total population, but also in the *size* of the poor population and level and distribution of consumption *among* the poor. The improvements occurred at similar rates for urban and rural areas. Furthermore, the extent of poverty reduction in Bangladesh between 2000 and 2005 was on par or higher than what was seen in other countries in South Asia during similar periods. This was partly due to GDP growth rates that compared well with the region, as well as almost no change in consumption inequality during this period.

Trends in poverty – national, rural, and urban

6. National poverty headcount rate declined by 18 percent (or 9 percentage points) between 2000 and 2005. In 2005, 40 percent of Bangladesh's population was poor (per capita

consumption below the *upper poverty line*) as compared to 49 percent in 2000 (Table 1-1). The percentage decline in poverty rate was higher in urban areas (24 percent) than rural areas (19 percent),[1] which translated to reductions of 6.8 and 8.5 percentage points for urban and rural areas respectively.

7. A notable feature of poverty reduction between 2000 and 2005 was a sizeable decline in the incidence of *extreme poverty*. The percentage of population under the *lower poverty line*, the threshold for extreme poverty, fell by 27 percent (or 9 percentage points) from 34 percent of the population in 2000 to 25 percent in 2005. A fall of 27 percent (or 5 percentage points) occurred in urban areas and that of 25 percent (9 percentage points) in rural areas (see Table 1-1). The percentage decline in extreme poverty rate was thus more than that in the poverty rate, consistent with the growth in per capita consumption for the bottom two deciles being higher than that for the third and fourth deciles (see below).

Table 1-1: Poverty Headcount Rates (%)

	Upper Poverty Lines		*Lower Poverty Lines*	
	2000	*2005*	*2000*	*2005*
National	48.9	40.0	34.3	25.1
Urban	35.2	28.4	19.9	14.6
Rural	52.3	43.8	37.9	28.6

Source: HIES 2000 and 2005; using poverty lines estimated with HIES (2005) and deflated to adjust for inflation during 2000-05.

Box 1.1: Poverty measurement in Bangladesh

The poverty estimates are based on poverty lines developed by the Bangladesh Bureau of Statistics (BBS) jointly with World Bank staff, using HIES 2005 data employing a Cost of Basic Needs (CBN) approach similar to what had been used for the previous poverty line developed using HIES 1991-92 (see, for instance, World Bank 2002). Intuitively, CBN poverty lines represent the level of per capita expenditure at which a household can be expected to meet their basic needs (food and non-food). This is measured by: (i) estimating a food poverty line as the cost of a fixed food bundle (in case of Bangladesh, consisting of 11 key items), providing minimal nutritional requirements corresponding to 2122 kcal/day/person; and (ii) adding an "allowance" for non-food consumption to the food poverty line. For the *lower poverty line*, the non-food allowance is the average non-food expenditure of households whose *total* consumption is equal to the food poverty line; whereas for the *upper poverty line*, the non-food allowance is the average nonfood expenditure of households whose *food* consumption was equal to the food poverty line.

As prices and consumption patterns vary between different geographical areas, poverty lines are estimated for each of 16 different geographical areas. To obtain poverty estimates for previous years (1991-1992, 1995-1996 and 2000), the 2005 poverty lines are deflated by price indices to represent identical purchasing power for all years. Estimates using alternative methodologies, which serve as important "sensitivity" checks for poverty trends, reveal that similar trends are obtained for a wide range of methods for estimating and updating poverty lines (for a more detailed description of the methodology, see Annex 1). The poverty estimates have been made public by the government through the Preliminary HIES 2005 Report (October 2006) and the full HIES Report (2007) by BBS.

8. The fall in poverty headcount rates was large enough to significantly reduce the number of people in poverty or extreme poverty. The size of the population below the upper poverty and the lower poverty lines declined by nearly 6 million and 8.3 million respectively between 2000 and 2005. However, an estimated 56 million Bangladeshis were still below the (upper) poverty line in 2005, 35 million among whom were below the lower or extreme poverty line (see Annex 1, Table A-1.1).

[1] The reductions were statistically significant – at 95 percent level of confidence for national and rural poverty and at 90 percent level for urban poverty (see Annex 1, Figure A-1.1).

Table 1-2: Depth and severity of poverty

9. Depth (poverty gap) and severity (squared poverty gap) of poverty showed significant improvements as well, falling by 30 and 37 percent respectively (Table 1-2). The rates of decline were similar for urban and rural areas – the poverty gap declined by 28 and 29 percent and squared poverty gap by 36 and 37 percent for urban and rural areas respectively. These trends suggest significant improvement among those below the poverty line. A fall in poverty gap indicates that the *average* consumption of the poor has improved, while a decline in squared poverty gap implies a more equitable *distribution* of consumption among the poor. These improvements also occurred at similar rates for the urban and rural poor.

	Poverty gap		*Squared poverty gap*	
	2000	*2005*	*2000*	*2005*
National	12.8	9.0	4.6	2.9
Urban	9.0	6.5	3.3	2.1
Rural	13.7	9.8	4.9	3.1

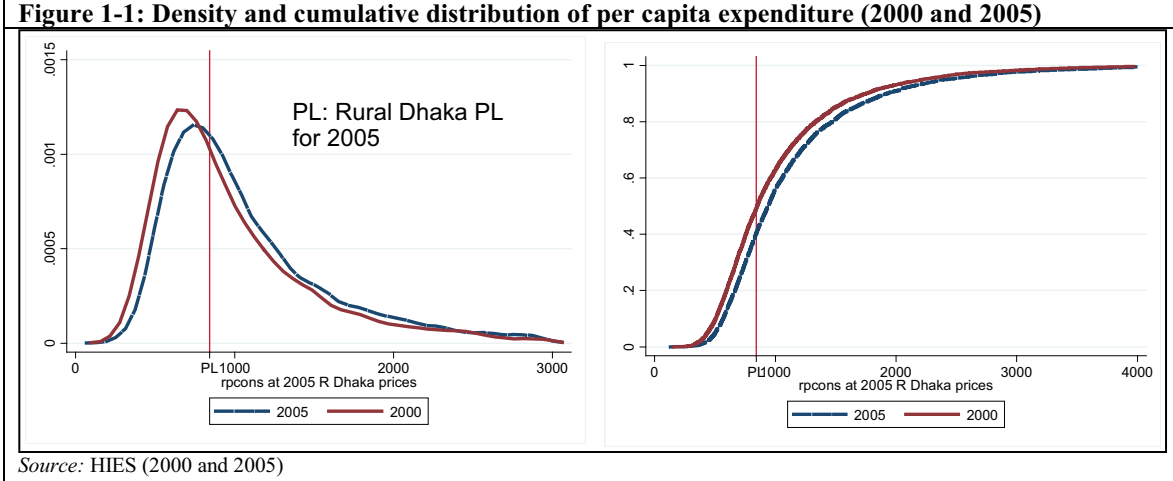
Source: HIES 2000 and 2005; using poverty lines estimated with HIES (2005) and deflated to adjust for inflation during 2000-05

10. While the rural-urban gap in poverty rate closed slightly between 2000 and 2005, the gap still remains considerable. Rural poverty rate in 2005 was 44 percent, compared to the urban poverty rate of 28 percent. Rural areas account for 75 percent of the total population of Bangladesh, but are home to 82 percent of the poor people in the country.

Sensitivity of poverty trends to methods of measurement

11. The reduction in poverty headcount is robust to a wide range of choices for poverty lines. Figure 1-1 shows the changes in the distribution of per capita consumption expenditure between 2000 and 2005. The density curves show that the distribution of per capita expenditures has shifted slightly downward and to the right, consistent with a rise in real consumption levels for the entire population. The cumulative distribution curves show that for a wide range of poverty lines, the reduction in poverty rate between 2000 and 2005 is significant and almost unchanged.[2]

Figure 1-1: Density and cumulative distribution of per capita expenditure (2000 and 2005)



Source: HIES (2000 and 2005)
Note: The poverty rate is given by the vertical coordinate (Y-axis) of the point where the cumulative distribution functions intersect the poverty line.

12. How sensitive are the poverty trends to different methods of adjustment for household composition and size? *Per capita* expenditures have been used so far to measure welfare at individual level and to estimate poverty rates, a choice of methodology that ignores the composition of households (for instance, treats adults and children equally in terms of consumption needs) and economies of scale in consumption for larger households (certain types

[2] The cumulative distribution of per capita consumption expenditures drawn separately for urban and rural areas show that the estimated change in urban poverty is more sensitive to the placement of the poverty line than that in rural poverty (see Annex 1, Figure A-1.2).

of consumption items are lumpy and/or shared between household members – see also chapter 3). Given the difficulty in quantifying these effects in a way that most analysts and policymakers can agree on, they are routinely excluded from poverty measures adopted by most countries including Bangladesh. However, it is still important to see whether such adjustments for household composition and size make a significant difference to the poverty trends.

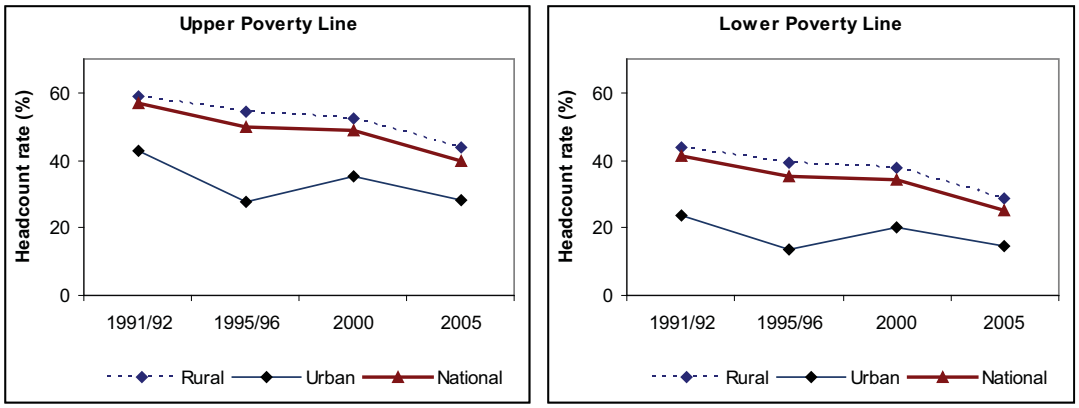
13. The decline in poverty is found to be robust to a range of adjustments for household composition and scale effects (see Annex 1, section II for a discussion and results). With the poverty line unchanged from before, poverty estimates after the adjustments are lower than those with unadjusted expenditures. However, for all reasonable adjustments for household composition and scale effects, the *decline* in poverty between 2000 and 2005 is significant and comparable to the decline with unadjusted expenditures.

14. Therefore, there is unequivocal evidence to suggest that the substantial poverty reduction between 2000 and 2005 in Bangladesh is not an artifact of the choice of poverty line or welfare measure (per capita expenditures). Rather, the decline was significant enough to be robust to almost any reasonable choice of poverty line and/or welfare measure.

How does the latest period measure up against the previous decade?

15. Longer-term figures show that the gains during 2000-2005, far from being an aberration, can be seen as continuing a trend from the decade of the 1990s. The proportion of population below the upper poverty line had fallen from 57 percent in 1991-1992 to 49 percent in 2000, while that below the lower poverty line declined from 41 to 34 percent (Figure 1-2).[3] The years 2000-2005 saw an acceleration of this trend, particularly in national and rural poverty reduction. While rural and urban areas experienced similar reduction in poverty rates over the 15 year horizon, the years between 1991-1992 and 1995-1996 saw the largest decline in urban poverty and 2000-2005 the largest decline in rural poverty.

Figure 1-2: Long-term poverty trends (headcount rates)



Source: HIES (different rounds)
Note: Headcount rates calculated using the Upper and Lower Poverty Lines of 2005, adjusted for price changes between years.

Drivers of poverty reduction: growth and distributional changes

Table 1-3: Mean real (rural 2005 Dhaka prices) per capita monthly consumption

[3] Also see Annex 1, Table A-1.2

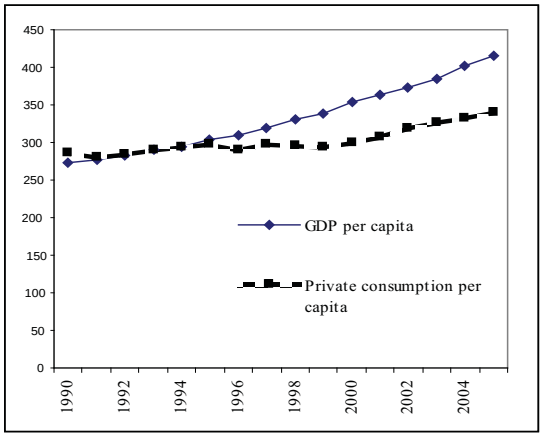
16. The rapid decline in poverty during 2000-2005 was driven by sizeable growth in per capita consumption expenditure. Real per capita consumption expenditure from HIES increased by 12 percent between 2000 and 2005 – an average annual growth rate of 2.3 percent (Table 1-3). The increase in percentage terms was higher for rural areas than urban areas. In spite of that, the percentage reduction of urban poverty was higher because urban inequality declined while rural inequality increased slightly (see below for more details).

	2000	2005	Cumu-lative change (%)	Average annual growth (%)
National	1082	1210	11.9	2.3%
Rural	985	1103	12.0	2.3%
Urban	1465	1535	4.8	0.9%

Source: HIES 2000 and 2005
Note: To obtain real consumption, nominal consumption expenditures are deflated by price indices to adjust for inflation over time and by upper poverty lines to adjust for regional price differences.

17. The estimates of consumption growth from HIES are also consistent with Bangladesh's macroeconomic performance during the 2000-2005. Annual average growth in real GDP per capita was 3.3 percent and that of private consumption per capita was 2.8 percent. The growth in the private consumption component was also higher during 2000-2005 than any previous period since 1990, which is consistent with 2000-2005 being the years of highest poverty reduction (Figure 1-3).

Figure 1-3: Trends of GDP per capita and Private Consumption per capita



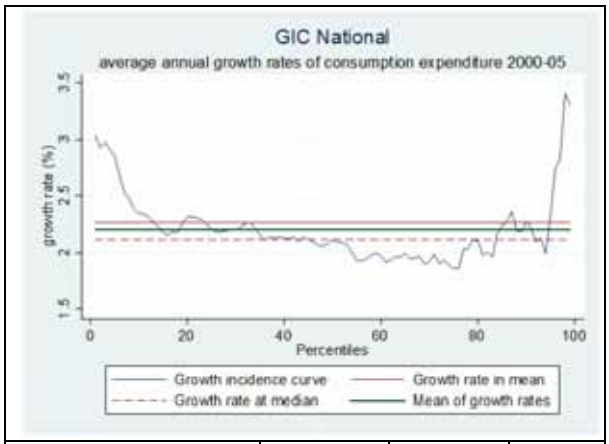
Source: World Development Indicator 2007

18. Growth has also been accompanied by a shift in the relative importance of different sectors in the Bangladeshi economy. The services sector now accounts for more than 50 percent of GDP while the share of agriculture has declined from 25 to 19 percent between 2000 and 2005. Industry accounted for 26 percent of GDP in 2005 with the Ready Made Garments (RMG) sector being the main source of manufacturing growth. These shifts are no doubt an important part of the explanation for the pattern of poverty in Bangladesh reduction – across urban and rural areas and regions. Chapter 2 of this report analyzes the contributions of different sectors in creating employment and reducing poverty.

19. HIES data shows that growth in consumption occurred across the board for the poor and non-poor alike. Real per capita consumption of the poorest and richest population deciles grew by 14 percent between 2000 and 2005, and that of the second-poorest and second-richest deciles by 12 and 11 percent respectively.

Figure 1-4: Growth Incidence Curve for per capita expenditure (2000-05)

20. The *Growth Incidence Curves* (GICs, see Figure 1-4) indicate that annual average growth of per capita consumption during 2000-2005 was highest for the bottom 20 percent and top 10 percent of the population. A comparison of the *mean of growth rates* of percentiles of per capita consumption with the *growth rate of mean* per capita consumption (Figure 1-4) suggests that growth was nearly equitable across consumption groups in *percentage* terms. Growth was more pro-poor in urban areas than in rural areas (Annex 1, Figure A-1.3). This is consistent with the mean of growth rates being slightly higher than the growth rate of mean consumption for urban areas, while the converse is true for rural areas (Figure 1-4).



	National	*Rural*	*Urban*
Growth rate of mean	2.27	2.29	0.94
*Mean of growth rates**	2.21	2.10	1.38

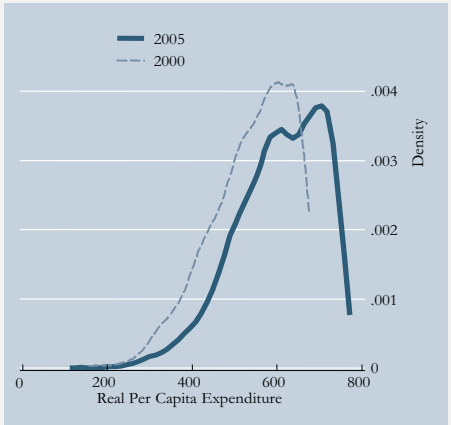
Source: HIES (2000 and 2005)
*: mean of annual growth rates of all percentiles

21. The pattern of consumption growth shown in Figure 1-4 and Figure A-1.3 (Annex 1) also implied large gains among the extreme poor (the bottom three deciles of the population) as well as among the very poorest (the bottom decile), consistent with the large reduction in extreme poverty rate mentioned above (see Box 1.2).

Box 1.2: Rising consumption among the extreme poor between 2000 and 2005

Real per capita expenditures indicate a greater than average improvement in the economic status of the bottom three deciles and the bottom decile between 2000 and 2005. Between 2000 and 2005, average real per capita expenditures of the bottom three deciles and the bottom decile grew at annual average rates of 2.5 and 2.9 percent respectively, compared with 2.4 percent for the whole population. Among urban households, expenditure growth among the bottom three deciles (2.1 percent) was much higher than that for the entire urban population (1 percent), while among rural households growth was more uniform across expenditure groups. The growth also appears to have been equitably distributed among the extreme poor. The distribution of expenditures among the bottom three deciles shifted rightwards from 2000 to 2005 in a way that suggests growth occurred for the entire distribution of the extreme poor (see graph).

Distribution of per capita expenditures of bottom three deciles



Source: HIES 2000, 2005

22. Consistent with the growth trends, relative inequality as measured by the national Gini index of per capita real consumption showed no change between 2000 and 2005 (Table 1-4). The urban gini fell and the rural gini increased over this period, but these changes were quite small.

Table 1-4: Gini index of per capita expenditure

	1991-92	**1995-96**	**2000**	**2005**
National	0.26	0.31	0.31	0.31
Urban	0.31	0.37	0.37	0.35
Rural	0.25	0.27	0.27	0.28

Source: HIES (different rounds)
Note: 1) Nominal consumption are adjusted for spatial/regional price differences (deflated by Upper PL) to obtain "real" ginis for each year
2) Gini index for year *t* is half the ratio of mean absolute deviations (MAD) of per capita exp to the mean of the distribution in year *t*.

23. Stable relative inequality combined with strong consumption growth (as measured by HIES) led to the accelerated pace of poverty reduction during 2000-2005. The periods of higher poverty reduction – 1991-1992 to 1995-1996 and 2000 to 2005 (see Figure 1-2) – also saw relatively high annual growth in real per capita consumption (Table 1-5). The (relative) Gini of per capita consumption increased by more than 15 percent between 1991-1992 and 1995-1996, but remained stable thereafter (Table 1-4). This explains why poverty reduction between 1991-1992 and 1995-1996 was smaller than what was seen for 2000-2005, in spite of consumption growth being higher in the former period.

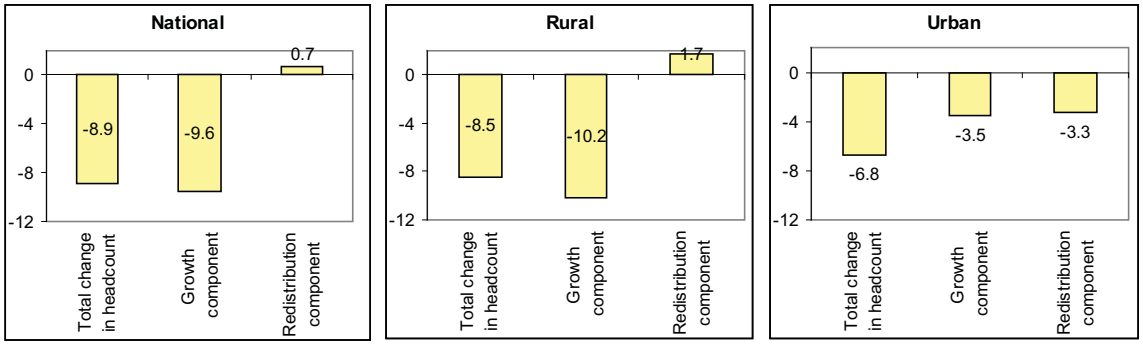
Table 1-5: Growth of real per capita expenditure (%)

1991/92 - 95/96	3.84
1995/96 - 2000	0.48
2000 - 2005	2.27

Source: HES 1991-92, 1995-96, and HIES 2000, 2005.

24. Decompositions of changes in poverty measures indicate that the reductions in national and rural poverty during 2000-2005 are largely explained by consumption growth, while a small rise in inequality only marginally dampened this impact (Figure 1-5). In urban areas, on the other hand, growth and redistribution effects act in the same direction and are of similar magnitude. These results are consistent with the growth and inequality trends described above – growth in national and rural consumption has been substantial along with little change in relative inequality, while a lower rate of consumption growth in urban areas has been accompanied by some reduction in relative inequality.

Figure 1-5: Growth-inequality decompositions of poverty headcount changes using Upper Poverty Line (2000-2005)



Source: HIES (2000 and 2005)

Note: 1) "Total change" refers to percentage point change in poverty headcount; "growth component" to the change in headcount attributable to growth in real per capita consumption; "redistribution component" to the change in headcount attributable to changes in the distribution of per capita consumption.

2) The results are obtained by taking the average of two decompositions – with 2000 and 2005 as base years.

Changes in urban inequality

25. The small decline in urban inequality (around 5 percent reduction in the Gini index) merits some discussion, since it contradicts the conventional wisdom that rapid economic growth and urbanization is likely to lead to an increase in urban inequality.

26. *Firstly*, it must be stressed that the decline in urban inequality is marginal and the more relevant policy issue is that urban inequality in 2005 is still as much as 25 percent higher than that in rural areas (Table 1-4). *Secondly*, the change in the overall urban inequality measure masks high variation across urban areas in different divisions, with inequality rising for urban areas with high consumption growth (Sylhet and Chittagong divisions) and falling where consumption was stagnant (Khulna, Rajshahi, and Dhaka divisions). Disaggregating the urban areas differently, all the reduction in inequality occurred in metropolitan areas, while inequality remained unchanged for urban municipalities. The wide variation in trends across different urban areas suggests that local factors unique to specific areas may have played an important role in explaining these

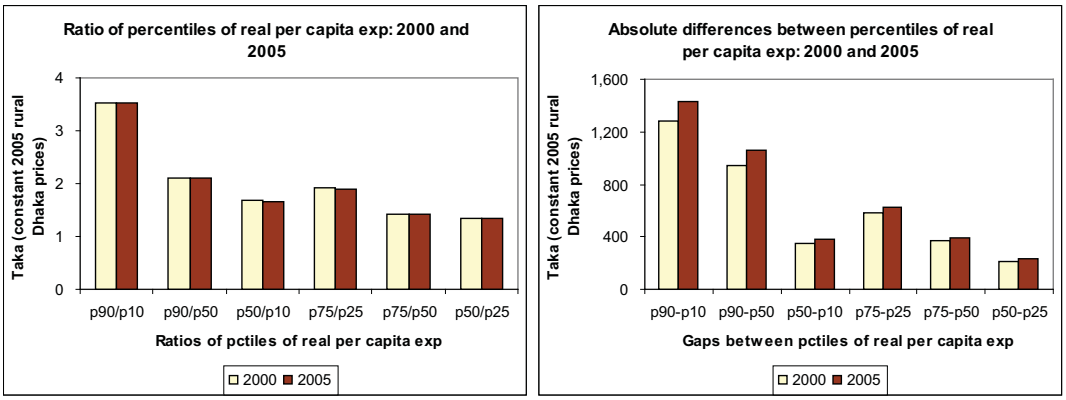
trends. *Thirdly*, the fall in consumption inequality in some of the urban areas is consistent with the pattern of income and employment growth in Bangladesh. As chapter 2 will show, income growth was high in the nonfarm sector, which tends to be concentrated in urban areas, and particularly in the services sector where many of the urban poor are employed. This would have contributed to reduction in inequality in some urban areas with a large services sector.

27. The urban inequality trend may also be affected by data or sampling issues. For example, if "respondent bias" (a higher incidence of non-responses among relatively wealthy respondents to a survey – more likely to occur in urban areas) had increased between 2000 and 2005, the estimated change in inequality would not be accurate. However, there is no evidence that 'respondent bias' has changed over these years. A more serious concern is that due to the updating of the urban sampling frame between 2000 and 2005, a few areas classified as "rural" in 2000 are "urban" in 2005, which can yield misleading results when consumption in urban and rural areas are compared over time. While such data problems cannot be ruled out completely, the fact that the urban Gini remained stable from 1995-1996 to 2000 as well seems to suggest that average urban inequality has stabilized in Bangladesh for quite some time and the period of 2000-2005 has just seen a continuation of that trend.

Relative versus absolute inequality

28. Notably, the measure of inequality (Gini index of per capita consumption) used so far is *relative*, implying that it remains unchanged if inequality *relative to the mean of the distribution* does not change. In contrast, *absolute* inequality measures the *size of the gap in consumption* between different groups.[4] Each measure has its pros and cons: while the absolute index is a more intuitive concept, the relative index is more meaningful for comparisons over time especially when the average levels of consumption can change significantly. In contrast to the relative Gini indices in Table 1-4, the absolute Gini index of per capita real consumption increased by 13 percent and 15 percent for the national population and rural population respectively between 2000 and 2005, while remaining stable for the urban population (see Annex 1, Table A-1.4).

Figure 1-6: Relative and absolute inequality – ratio of selected percentiles and gaps between percentiles of per capita real expenditures



Source: HIES (2000, 2005)
Note: pN refers to the Nth percentile of per capital real consumption expenditure.

[4] The difference between relative and absolute Gini indices is illustrated by one example: if everyone's per capita expenditure increased by the same proportion, relative Gini would remain unchanged while the absolute Gini would increase (since the gaps would increase, given an initial distribution that is unequal).

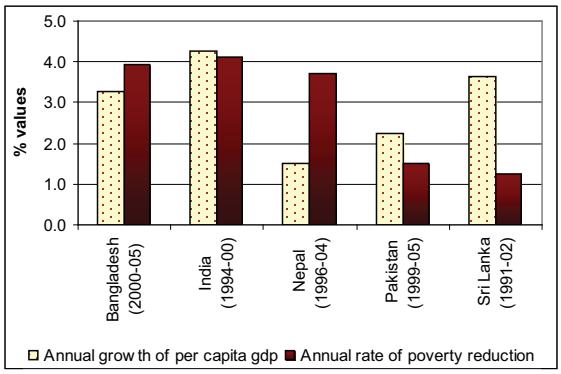
29. The distinction between changes in relative and absolute inequality is also seen from Figure 1-6. The *ratios* between different percentiles of per capita real consumption have remained almost unchanged from 2000 to 2005, which is consistent with stable relative Gini indices. But the absolute *sizes* of the differences between higher and lower percentiles have increased from 2000 to 2005, consistent with the increase in the absolute Gini index. The gap in consumption between the upper and lower ends of the distribution is higher for the urban than for the rural population (see Annex 1, Figure A-1.4). This gap has widened for the rural population – consistent with the trends of absolute Gini indices.

Growth and poverty reduction – a cross-country comparison

30. Cross-country comparisons of poverty incidence can only be indicative – every country uses a different national poverty line reflecting its own consumption pattern and national consensus on measurement method and calorie threshold, and countries do not conduct their household surveys during the same years. Even with these caveats, cross-country comparisons on the rate of poverty *reduction* can be instructive.[5] The average annual rate of poverty reduction in Bangladesh during 2000-2005 was second only to that for India – among all South Asian countries for which data is available over (roughly) comparable periods (Figure 1-7).

31. GDP growth also appears to have had a larger impact on poverty in Bangladesh than in other South Asian countries with the exception of Nepal, as seen from the ratio of the height of the dark bar to the light bar for each country in Figure 1-7 – a rough measure of responsiveness of poverty to GDP growth (see Section III for more precise elasticity estimates for Bangladesh). Stable relative inequality explains why Bangladesh during 2000-05 reduced poverty at a rate close to India's and higher than all other countries in the region, even though the annual average GDP growth in Bangladesh has been lower than that for India and Sri Lanka.[6]

Figure 1-7: Annual average growth in GDP and reduction in poverty headcount



Source: See Annex 1, Table A-1.5
Note: 1) Poverty lines are defined differently across countries; so poverty headcount ratios are not comparable across countries.
2) Annual rates of reduction in poverty are *negative* of the % values shown by the dark bars.

32. For most South Asian countries, acceleration of growth since early 1990s has been accompanied by increasing inequality; whereas for Bangladesh, inequality has stabilized since the mid-1990s (see Table 1-4 above). The precise reasons for this difference are difficult to identify without an in-depth analysis covering all countries that is outside the purview of this report. The growth process in Bangladesh, however, offers some clues. The main stimulus to economic growth in Bangladesh since the late 1980s has been labor-intensive manufacturing, particularly RMG, micro- and small-scale nonfarm enterprises, and remittances from migrant workers – all of which typically provide economic opportunities for the poor and continued to drive poverty reduction during 2000-2005 (see chapters 2 and 3). Nevertheless, inequality increased till the mid-1990s because the sectors

[5] The inconsistencies are especially problematic when comparing the poverty level of one country with that of another. The problems are less severe in comparing the extent of poverty reduction across countries (over somewhat comparable periods), since that involves measuring the change in each country with the poverty line held constant in real terms.
[6] Bangladesh also outperforms African countries with a similar level of GDP per capita, such as Kenya, Mauritania and Burkina Faso, in poverty reduction (see Annex 1, Table A-1.5). This is because Bangladesh has a higher rate of per capita GDP growth than all three countries, as well as a higher ratio of poverty reduction to growth (elasticity) than two of the countries.

experiencing higher growth had more unequal incomes to start with (relative to the agricultural sector) and because growth was not strong enough to raise wages in the informal labor markets. Since 2000, labor productivity and wages in all sectors have increased (see chapter 2), which has helped stabilize consumption inequality and accelerate poverty reduction.

33. The pace of poverty reduction in Bangladesh is, however, much lower than that for fast-growing East Asian countries, like China, Thailand and Vietnam (Annex 1, Table A-1.5). While all three countries experienced higher per capita GDP growth rates than Bangladesh, two of these countries also have comparable elasticity of poverty to growth. This suggests that if Bangladesh is able to attain GDP growth comparable to East Asian levels, it may match the pace of poverty reduction seen in these countries. Vietnam is a telling example; while both Bangladesh and Vietnam had similar poverty rates of nearly 58 percent around 1990, the poverty rate of Bangladesh was twice that of Vietnam in 2005. Vietnam's annual GDP growth was on average 2.5 percentage points higher than Bangladesh's in this period – while Bangladesh's real per capita income increased by nearly 50 percent, Vietnam's quadrupled from 1990 to 2005.

34. **In concluding this section**, it is useful to recap the main findings. Bangladesh experienced substantial poverty reduction during the last 15 years (between 1991-1992 and 2005), with the pace accelerating during 2000-2005. Rapid growth in consumption has been the primary contributing factor; growth has occurred at similar rates for the poor and non-poor alike, which is consistent with relative inequality remaining almost unchanged for the country as a whole. At the same time, given the large disparity in the initial (2000) distribution of consumption, similar growth rates for all consumption groups necessarily imply an increase in the average size of the gap in consumption between the poor and the non-poor. Absolute inequality or the size of the gap in consumption between different groups has expanded for the country as a whole. For rural areas, consumption growth has been the dominant force in reducing poverty; whereas in urban areas, a marginal reduction in inequality has also had a sizeable poverty reducing impact.

35. Poverty reduction in Bangladesh in 2000-2005 compares well with other South Asian countries in recent years, with an annual average rate of reduction second to only that for India. Bangladesh could achieve this in part due to strong growth, and in part due to no appreciable increase in inequality, with the result that GDP growth had a higher impact on poverty in Bangladesh than for all countries in the region with the exception of Nepal. However, as Asia becomes more regionally integrated, it is natural for Bangladesh to "look East." Comparisons with Vietnam, China, and Thailand underscore the importance of higher growth to make even further reductions in poverty.

II. Projecting recent trends in growth, inequality, and poverty into the future

36. The emerging patterns of growth and inequality changes are encouraging for poverty reduction in Bangladesh. An interesting question in this context is whether, and under what conditions, can Bangladesh achieve the Millennium Development Goal (MDG) of halving the proportion of people living in extreme poverty from the 1990 level by the year 2015?

37. A simple way to estimate future poverty trends is by applying a growth elasticity of poverty, i.e. the percentage reduction in poverty obtained with a one percent growth in consumption, along with different scenarios for GDP growth. Different methodologies for estimating growth elasticity can yield different poverty projections for the same growth scenario. Three commonly used methodologies are employed on data for earlier years to yield poverty projections for 2005, which are then compared with the actual poverty rate of 2005 to select the most appropriate method for estimating elasticity. Projections for poverty trends are then produced using one

selected method (as developed by Datt and Ravallion, 1992), for different scenarios of future GDP growth (Box 1.3; also see Annex 1, Section II).

Box 1.3: The concept of elasticity of poverty to growth and the choice of methodology

Economic growth, by definition, increases income and consumption, but it is also critical to take into account the impact on poverty *via* a change in income/consumption distribution caused by growth. The growth elasticity of poverty can be decomposed as: ($\lambda \approx \gamma + \beta\delta$), where γ denotes the gross elasticity of poverty to consumption growth (holding inequality constant); β the elasticity of inequality to growth; and δ the elasticity of poverty to inequality (holding consumption growth constant). The *net elasticity* of poverty to growth (λ) can be approximated by the sum of the *direct* impact of growth (γ) and the *indirect* impact via redistribution ($\beta\delta$). Three commonly used methodologies are considered to estimate both the direct and the indirect effects: (1) *Regression method* (see, for example, World Bank 2002); (2) *Bourguignon (2002) method*; and (3) *Datt-Ravallion (1992) method*. While Datt-Ravallion (1992) method is selected for projecting future poverty rates – since it performs best in predicting the national poverty rate of 2005 using data from previous surveys – the projections are quite stable across different methods (see Annex 1, Section II). The estimate for net elasticity of poverty to growth (λ) using Datt-Ravallion method is -1.51, while those using the Regression and Bourguignon methods are -1.62 and -1.79 respectively.

Projected poverty trends

38. Three alternate growth scenarios are considered: real GDP growth rates of 4.5, 5.3 and 7.5 percent per annum. The annual growth rate of 5.3 percent is the baseline scenario, given that this was the annual average growth of real GDP between 2000 and 2005. Since the net elasticity of poverty was estimated with respect to growth in per capita expenditure from HIES, the GDP growth rates have to be converted into growth in per capita consumption.[7]

39. If GDP were to grow at the current rate (5.3 percent annually) between 2005 and 2015, the incidence of poverty (with respect to *upper poverty lines*) would decline to 27 percent by 2015, which means Bangladesh will *meet the MDG of halving poverty rates between 1990 and 2015*. If the country were to grow at only 4.5 percent per annum, poverty reduction would likely not meet the MDG target. Conversely, if the country were to instead grow at 7.5 percent per annum over this period, the incidence of poverty would decline to 22 percent by 2015, well below the MDG target. Using poverty estimates based on the *lower poverty lines*, the incidence of extreme poverty in Bangladesh would decline to 15 percent in 2015 under the 4.5 percent growth scenario, and to 9 percent under the 7.5 percent growth scenario. Thus for both the high-case and low-case growth scenarios, Bangladesh would be well on track to halve extreme poverty by 2015 from the 1990 level (see Annex 1, Figure A-1.5 for all projections).

Caveats to the projections

40. ***History may be an imperfect guide.*** Firstly, the above projections are extrapolated from historical data – an imperfect guide for the future. Actual poverty reduction for any growth rate can be quite different from what was experienced historically *if* the distributional impact of growth turns out to be different from what was seen in recent years. Therefore, the projections here must not be interpreted as definitive future trends, but rather as showing the future path of poverty reduction *if* the association between growth and inequality during the last decade were to hold for the future. But, for example, if inequality were to increase faster than what it had during

[7] Between 2000 and 2005, the annual growth rate of per capita household consumption expenditure was 2.3 percent in comparison to the GDP growth rate of 5.3 percent. For other scenarios, the same conversion rate is applied: 4.5 percent and 7.5 percent of real GDP growth rates are converted to 1.9 percent and 3.2 percent of per capita household consumption expenditure.

the last decade, poverty reduction would be lower than what is projected here for the same GDP growth rate.

41. ***Shocks may affect growth and responsiveness of poverty to growth.*** Secondly, these projections do not take into account the poverty impact of shocks that may occur in a certain year. As mentioned earlier, the year 2007 has seen two natural disasters – serious floods and a cyclone –estimated to reduce GDP growth by at least 1 percentage point from pre-shock projections. The elasticity of poverty reduction to growth calculated here suggests that even a one-percentage point loss in GDP growth would lower the extent of reduction in poverty headcount in 2007 by 0.7 percentage points (or 14 percent).[8] Even these estimates will be inaccurate if the shocks have led to distributional changes different from what was seen during the years prior to 2005.

42. The recent international commodity price increases, mainly for food and fuel, would have added to the adverse impact on poverty due to the larger share of food in the consumption basket of the poor. For instance, the nearly 40 percent increase in the price of rice between April 2007 and March 2008, accompanied by a 5 percent nominal wage increase for all workers, would have led to a 3 percent average loss in real income for households and raised poverty rate by around 3 percentage points from the baseline poverty rate of 2005 (see chapter 6 for more details). Given that GDP grew at around 6 percent annually during 2005-2008, the poverty rate would have been expected to decline by around 5 percentage points between 2005 and 2008 (using the elasticity of poverty reduction to growth estimated earlier) as a normal response to GDP growth. Instead, with the impact of the food price shock factored in, the net decline in poverty rate between 2005 and 2008 would have been roughly 2 percentage points (from 40 to 38 percent). This implies that *some of the reduction in poverty occurring as a result of strong and stable GDP growth since 2005 has been negated by the food price shock*. The frequency of such shocks, how long they last (especially relevant for commodity price rises), and how rapidly the economy bounces back from them would influence the future pace of poverty reduction and therefore the rate of progress towards the MDG target.

43. ***Continued decline in fertility will be crucial to meet these projections.*** An important driver of poverty reduction between 2000 and 2005 was a sizable reduction in household size. Average household size fell from 5.2 in 2000 to 4.9 in 2000, mainly a reflection of reduction in fertility rate (see chapter 3). The population growth rate fell from 2.9 percent annually in the 1970s to 1.5 percent by the late 1990s. Estimates suggest that if household size had *not* changed between 2000 and 2005, the reduction in poverty would have been about *half* of the actual reduction (see section III, Annex 1). The projections so far, being extrapolated from the poverty trends from 2000 to 2005, implicitly assume that the reduction in household size would continue till 2015. However, it is still useful to examine what would happen if this assumption were not to hold true.

44. If household size is *assumed to not decline* between 2005 and 2015, the simulations suggest that poverty reduction during this period would be around 7-10 percentage points less than the projections presented earlier (see section III, Annex 1). For example, if GDP were to grow at an annual average rate of 5.3 percent, poverty rate is estimated to fall to 34 percent in 2015 if household size remains unchanged from 2005, compared to 27 percent in the earlier projections. Even if GDP were to grow at 7.5 percent annually, the MDG target of halving poverty between 1990 and 2015 would not be met *if* household size were to stop declining from 2005 onwards. The primary reason for the higher poverty projections is a much lower impact of GDP growth on the per capita consumption expenditure. No change in household size essentially implies no

[8] This assumes a pre-shock GDP growth of 7 percent for 2007, which would be reduced to 6 percent due to the natural disasters, which would in turn reduce the rate of reduction in poverty headcount rate from 4.6 to 3.9 percent for 2007.

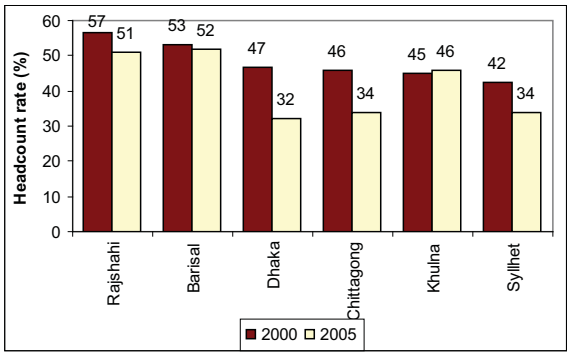
reduction in population growth, which reduces the growth rate of per capita expenditure for any given GDP growth, resulting in poverty reduction being much less responsive to GDP growth.[9]

45. The assumption of no decline in household size from 2005 is no doubt unrealistic, given Bangladesh's history of sustained decline in fertility – total fertility rate fell from 7 in 1975 to 3.2 in 1999-2000. This has reduced not only household size, but also the dependency ratio within households (see chapter 3). Rather, this sensitivity analysis is most useful in highlighting how crucial it is for the country to continue along the path of fertility reduction in order to achieve a sustained and sizeable reduction in poverty.

III. The changing pattern of poverty across regions

46. While poverty reduction has occurred for both rural and urban areas, the reduction has been highly uneven across regions. The largest decline in poverty incidence occurred for the Dhaka division, followed by Chittagong and Sylhet. In contrast, poverty headcount stagnated in Barisal and increased slightly for Khulna. As a result of this unequal pattern of poverty reduction, regional differences were quite sharp in 2005. The poverty headcount rate ranged from a low of 32 percent in Dhaka and 34 percent in Chittagong and Sylhet to over 50 percent in Barisal and Rajshahi (Figure 1-8). Dhaka and Chittagong divisions, with just over half the country's population in 2000, contributed 79 percent of the reduction in national poverty headcount between 2000 and 2005.

Figure 1-8: Poverty headcount trends for divisions



Source: HIES (2000, 2005)

47. Decomposition exercises also reveal that *within*-division effects explain all of the aggregate poverty reduction and population shifts *between* divisions or the interaction between the two effects play negligible roles. In contrast, when poverty change is decomposed by urban/rural, population shift from rural to urban areas accounts for as much as 9 percent of the reduction in national poverty rate (see Annex 1, Table A-1.6).[10] The large effect of population shift arises from a nearly 23 percent increase in urban share of the population from 2000 to 2005 (Annex 1, Figure A-1.6). This continues a historical trend– the urban population share increased by 22 percent from 1995-1996 to 2000 and by 15 percent from 1991-1992 to 1995-1996. The results also suggest that the rural-urban population shift occurred more within each division rather than across divisions.

Changes in regional and urban-rural gaps

48. There is evidence that average differences between divisions, but not between urban and rural areas, increased from 2000 to 2005. Cumulative growth in average per capita real expenditure was 12 percent for rural areas and 5 percent for urban areas (Table 1-3). But the highest growth in mean and median per capita expenditures occurred for Dhaka and Sylhet divisions, which also

[9] Interestingly, when household size is held constant (between 2000 and 2005), the elasticity of poverty to per capita *consumption* growth actually increases slightly in absolute value, indicating that the reduction in household size had a small negative impact on poverty by increasing inequality (see section III, Annex 1).

[10] These are lower than each sector's share in total population in 2000 (80 and 20 percent respectively) – a phenomenon that is explained by the effect of the rural-urban population shift on poverty.

had the highest expenditure levels in 2000. Rajshahi and Barisal, which had the lowest per capita expenditure levels in 2000, experienced far lower growth (see Annex 1, Figure A-1.8).

49. Thus the urban-rural gap in average per capita consumption expenditure appears to have shrunk while inequality between divisions has increased between 2000 and 2005. Decompositions of an inequality index (Theil inequality of per capita consumption) confirm this trend: the share of *between-division* inequality in total inequality increased from 2.4 to 4.5 percent, while that of *within-division* inequality fell slightly. In contrast, the share of the *between-group* component in total inequality fell when the groups are defined as urban/rural (see Annex 1, Figure A-1.8)

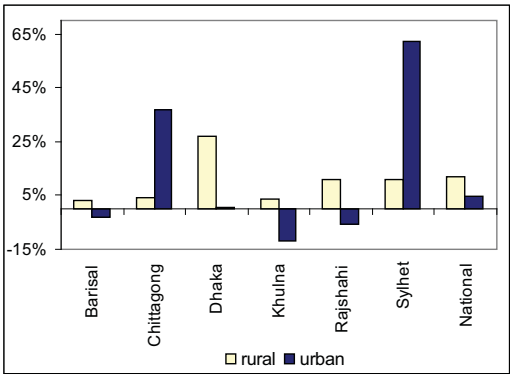
50. Growth and inequality changes played varying roles across divisions in explaining the poverty trends shown in Figure 1-8. The largest poverty reduction (of 31 percent) in Dhaka division occurred mainly due to high consumption growth. Poverty reduction in Chittagong and Sylhet (of 26 and 20 percent respectively) was driven by consumption growth, while increases in inequality dampened some of that impact. A modest reduction in poverty (of 10 percent) in Rajshahi was driven by marginal growth in consumption, with little or no change in inequality within. Barisal and Khulna saw no reduction in poverty on account of anemic growth along with increasing inequality within each division.[11]

Urban and rural trends within divisions

51. Since the HIES data is not strictly representative for areas smaller than divisions, these results are subject to large standard errors and must be interpreted with caution. At the same time, the sample sizes are large enough for some levels of disaggregation for useful comparisons over time and across space – thus providing some insights into the patterns of changes *within* divisions.

52. Consumption growth varies widely within rural and urban areas across divisions (Figure 1-9). Real per capita consumption growth during 2000-2005 ranged from 3-4 percent for rural Barisal, Khulna, and Chittagong to 11 percent for Rajshahi and Sylhet and 27 percent for rural Dhaka. Urban consumption growth rates range from -12 percent in urban Khulna to 62 percent in urban Sylhet. While Chittagong and Sylhet urban areas registered real per capita consumption growth of more than 35 percent, other urban areas experienced either no growth (urban Dhaka) or negative growth (urban Barisal, Khulna, and Rajshahi). Poverty reduction in Dhaka and Rajshahi divisions (relatively modest for Rajshahi) occurred mainly due to rural consumption growth; whereas urban growth was the primary factor behind poverty reduction in Chittagong and Sylhet divisions.

Figure 1-9: Growth in rural and urban per capita consumption (2000-2005)



Source: HIES (2000, 2005)

53. The lack of consumption growth in urban areas of Dhaka division merits closer examination, especially in the light of evidence in chapter 4 that suggests increasing concentration of economic

[11]While the contribution of within-division inequality to total inequality declined slightly, inequality within the division actually increased for all divisions other than Dhaka between 2000 and 2005 (see Annex 1, Table A-1.7). Consistent with this, the increase in mean expenditures was higher than that in median expenditures for all divisions other than Dhaka (Annex 1, Figure A-1.8).

activities in areas surrounding Dhaka city. More disaggregated results provide some clues to what might be happening. Per capita consumption growth was strong for the urban municipalities and rural areas of Dhaka division, but nearly zero for the Dhaka metropolitan area between 2000 and 2005 (see Annex 1, Table A-1.8). This is in turn consistent with a trend of economic activities and job creation spreading outwards from the core city to the outlying areas, most likely due to increasing agglomeration costs in the city (see chapter 4). At the same time, increasing integration of the surrounding areas including satellite towns and rural areas with the city has brought benefits to those areas. All these factors taken together seem to explain why rapid growth and poverty reduction in the rural areas and urban municipalities of Dhaka division co-exist with stagnation in the Dhaka metropolitan area.

54. **Summarizing the results from this section**, certain regional trends appear to be emerging. On the average, differences between divisions (geographic regions), rather than between urban and rural areas, appear to have increased from 2000 to 2005. Inequality *between* divisions also increased proportionately more than that *within* divisions, suggesting no evidence for convergence among regions for the country as a whole in consumption level and poverty. While there was little change in population shares among divisions during 2000-2005, a relatively large rural-to-urban shift in population share accounted for as much as 9 percent of the total change in poverty between 2000 and 2005.

55. A discernible pattern seems to have emerged in the rising inequality between divisions – the eastern parts of the country have far outpaced the areas to the West and Southwest in terms of poverty reduction, a trend that merits closer examination. The largest decline in poverty occurred for Dhaka division, followed in descending order of magnitude by Chittagong, Sylhet and Rajshahi, while Barisal and Khulna had no reduction. Poverty reduction was driven primarily by growth – while rural consumption growth was the primary driver in Dhaka and Rajshahi, urban consumption growth was the dominant factor in Chittagong and Sylhet divisions.

IV. Conclusion: a roadmap for the rest of the report

56. Rapid poverty reduction in Bangladesh during 2000-2005, which occurred in both urban and rural areas, was a result of strong growth in consumption, which occurred at similar rates for the poor and non-poor, resulting in an elasticity of poverty reduction to growth that was higher than most South Asian countries. If the GDP growth rate seen during 2000-2005 is maintained (or bettered), and if the trend in inequality is similar to what was seen in during the last decade, Bangladesh would attain the MDG target of halving its poverty and extreme poverty rate from the 1990 level by 2015. This prediction also hinges on whether the country is able to sustain its past successes in reducing fertility and consumption growth. Understanding the links between growth and poverty reduction would require a thorough analysis of the labor market – in terms of the trends and patterns in employment, wages, productivity, and income shares of key sectors of the economy, which will help identify future opportunities and address constraints to poverty reduction. This is the subject of chapter 2 of this report.

57. Notwithstanding the progress achieved, the country continues to face significant challenges. While relative inequality has not worsened, similar rates of consumption growth for upper and lower ends of the distribution imply that the size of the gaps between the rich and the poor has widened. The poor in Bangladesh, particularly the 25 percent of the population below the lower poverty line, still consume at very low levels. Identifying the factors – individual, household, and community- or area-specific – that limit the opportunities of the poor would be critical to inform policies to alleviate poverty, which is the subject of chapter 3. A related question would be how

endowments or characteristics of households, and the economic returns from these, have evolved to explain the rapid poverty reduction in recent years.

58. The regionally disaggregated analysis in this chapter hints that the gap in poverty incidence between Dhaka and the rest of the country that persisted through the 1990s has evolved into a regional (East-West) divide by 2005. How robust this trend is to more disaggregated analysis, and what factors are responsible for certain regions to lag behind the rest of the country, are some of the important questions addressed in chapter 4. Related to this is the question of how the emerging regional trends in poverty are related to increasing integration and economic dynamism in certain parts of the country; and if this were true, why parts of the country are excluded from this process.

59. Another important question in this context – addressed in chapter 5 – is whether the regional patterns in consumption growth and poverty are also mirrored by other indicators of welfare, such as health and education outcomes. Chapter 5 will analyze in-depth how human development indicators have evolved in recent years, how they relate to household level and regional patterns of consumption poverty, and what these trends and patterns would imply for the future economic prospects of the poor. The high vulnerability of the country to shocks – including household-specific events, frequent natural disasters and economic shocks like the recent food price increases – makes safety net programs all the more critical for sustaining the pace of poverty reduction. Chapter 6 analyzes the nature and pattern of shocks and the vulnerabilities they create, and concludes by examining the adequacy and effectiveness of public safety net programs relative to the needs of the poor and vulnerable.

2. Creating Jobs – Linking Growth and Poverty Reduction

1. Chapter 1 provided an overview of the main trends in poverty and inequality in Bangladesh. This chapter begins the search for explanations of these trends with a closer look at changes in labor market conditions. A number of specific questions are explored here. How did economic growth in Bangladesh translate into broad-based poverty reduction, in the light of the results of chapter 1? To what extent do changes in labor market participation, employment and returns to labor and human capital explain the time trends in poverty? Which sectors contributed the most to income growth and poverty reduction, and did poverty reduction take place within sectors or as a result of employment shifts across sectors? Finally, how do these trends vary by gender or geography, in the context of the large regional gaps in poverty reduction noted in chapter 1? [1]

2. Addressing the sorts of questions that are listed above requires combining micro and macro data from different sources, which can potentially be problematic. There is no single consistent data source that contains all the necessary information for analyzing the links among growth, employment, productivity, and poverty. Information on economic growth is derived from the System of National Accounts (SNA), employment and labor income from the HIES, and estimates of poverty from the consumption data in HIES. For the analysis to tell a consistent story, it is therefore imperative that data from different sources are comparable and compatible, income and consumption aggregates from the same survey are consistent, and household surveys are comparable over time. The data sets for Bangladesh are not perfectly compatible, which is to be expected. However, on balance, they provide a relatively good basis for analysis (see Annex 2, section I).[2]

I. Economic growth and the labor market in Bangladesh

3. For the past decade, economic growth in Bangladesh has been robust and stable. Respectable growth performance that began in the early 1990s with the introduction of political and economic reforms[3] continued into the new millennium, with record high GDP growth rates of above 5 percent per year between 2000 and 2005 and beyond (Figure 2-1). This has meant an average increase of above three percent annually in per capita income. In addition, the volatility of GDP changes in Bangladesh over past decades has been one of the lowest in the world. Income stability is beneficial to the poor, who usually have fewer means of coping with shocks.

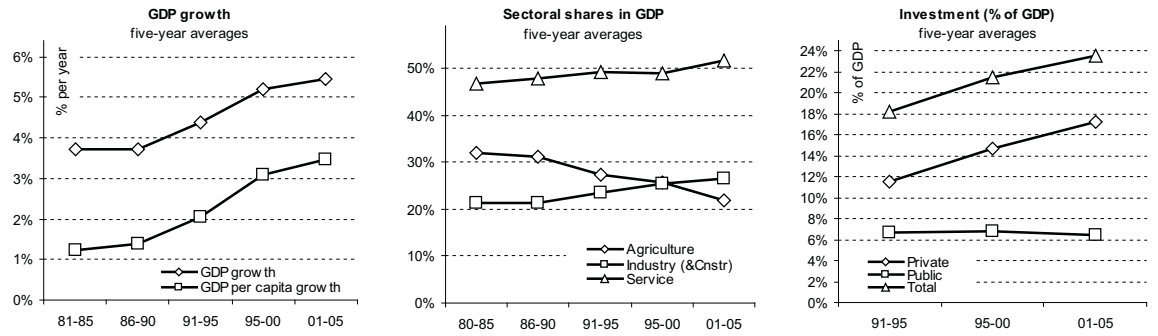
Nature of GDP growth in Bangladesh

4. A notable feature of economic growth in Bangladesh has been its broad-based nature. This means that all sectors – agriculture, industry, and services – are expanding and contributing to overall growth. However, over the longer term several trends are evident in terms of the *relative* performance of sectors (Figure 2-1). The *share* of the agricultural sector is gradually shrinking, while that of industry has been consistently increasing.[4] The latter has occurred due to the growth of the manufacturing sector in particular – led by the expansion of exports of the Ready Made

[1] The chapter is based on the report "Bangladesh: the Role of Employment and Earnings in Shared Growth. A World Bank Labor Market Study," World Bank (2008a). This report in turn draws from a number of World Bank reports on Bangladesh – including World Bank 2003a, 2003b, 2005a and 2007a.
[2] Also see chapter 1, World Bank (2008a).
[3] Reforms included political democratization, prudent macroeconomic management, trade openness and integration with the world economy, as well as deregulation and greater market orientation.
[4] Term "industry" is used in this chapter to denote mining, manufacturing, utility services, and construction.

Garments (RMG) sector (currently 17 percent of GDP) – and construction (currently 8 percent of GDP). The services sector has grown to account for a little more than half of GDP.

Figure 2-1: Dimensions of Growth in Bangladesh



Source: BBS

5. On the expenditure side, external demand (export, particularly of Ready Made Garments or RMG) has been instrumental in the expansion of industrial production. A simple decomposition reveals it contributed about one quarter of incremental GDP growth over the past decade, which leaves three quarters of the GDP growth to be explained by domestic demand directed towards domestically produced goods and services.[5]

6. A growth accounting exercise indicates that economic expansion has been driven primarily by factor accumulation; growth rates of capital stock and effective labor alike have accelerated over the past 15 years (World Bank, 2007a).[6] Rising growth in capital stock has contributed to the increase in labor productivity and wages discussed later in this chapter. Notably, investment by the private sector is largely responsible for the economy increasing its productive capacity. With public investment levels unchanged at about 6.5 percent of GDP, private investment, facilitated by a stable and more market-friendly environment, surged from 10 percent in the beginning of the 1990s to over 18 percent of GDP currently. This has been financed entirely from increased domestic savings, while rising foreign export earning from RMG has made it possible for domestic firms to bring in more imported capital goods. The potential of foreign savings (e.g., in the form of FDI) remains underutilized.[7]

II. Overview of the labor market

7. Overall, according to surveys, the labor market dimension of the business environment in Bangladesh compares favorably with that of its neighbors. Private sector firms do not report particular problems with the hiring and firing of workers and their staffing level is believed to be close to optimal (World Bank, 2003b). The relatively flexible labor market has facilitated the economic transition.

8. However, other dimensions of the investment climate, namely infrastructure bottlenecks and deficiencies in rule of law, act as constraints to business expansion and employment growth according to a recent investment climate survey (World Bank, 2008b). For example, the demand

[5] This simple decomposition ignores any potential multiplier effects.

[6] Growth of capital stock rose from an average rate of 4 percent per year during the 1980s to 6.6 percent during the past 15 years. Growth of effective labor also increased by almost 1 percentage point over the same period. The contribution of total factor productivity, which measures the efficiency with which capital and labor are used to produce output, to growth has been small.

[7] With FDI at 1.3 percent of GDP, Bangladesh ranks 92nd among 134 non-OECD countries for which such data exists.

for electricity has far outstripped the supply and the lack of dependable sources has compelled many firms to incur the costs of own generators or power outages. Despite progress over the past year, inefficiencies at Chittagong port have significantly increased the costs of foreign trade, thus limiting firms' growth potential. Law and order problems have been reported by entrepreneurs to be important areas of concern in a number of studies (see World Bank, 2003a and 2003b).

9. Labor force participation rates remained relatively steady during the 2000s; just about half of the working age population was in the labor force in 2000 and 2005, which is low by world standards. Labor force participation rate was only about 10 percent for women compared to more than 80 percent for men. The estimate for women must however be treated with caution since female labor force participation rates from the last two rounds of the Labor Force Survey was more than twice the rate reported here from HIES data.[8] Notwithstanding the discrepancy between surveys, women's participation in the Bangladeshi labor market is low by international standards – likely due to a combination of factors ranging from tradition to the low bargaining power of women within households and society and the physically demanding nature of work, particularly for daily wage activities like construction and harvesting (see World Bank, 2008d).

Unemployment and underemployment

10. During the 2000s, economic growth in Bangladesh was accompanied by the creation of about 5.6 million new jobs. With a growing working age population, this was however just enough to maintain the overall employment rate at an unchanged level. Unemployment rates are similar in Bangladesh to other low-income countries and countries in South Asia. Unemployment tends to be concentrated among the younger age groups, the more educated, and women. However, the unemployment rate *does not provide a meaningful measure* of labor market slack – first because it is highly sensitive to how labor market participation is measured; and second, in the absence of a comprehensive social security system only the better-off can afford not to work, while the rest needs to survive by working in low intensity, low paid daily wage jobs, or self-employment.

Table 2-1: **Overview of labor market, 2000-2005**

	2000	**2005**	Annualized real growth[10]
Population[1] (mn), o/w	128.9	141.8	1.9%
% urban	20%	25%	6.3%
Working age population[2] (mn)	72.6	83.6	2.9%
% of total	56%	59%	-
Employment[3] (mn)	37.5	43.1	2.8%
employment rate,[4] %	52%	52%	-
Unemployment rate,[5] %	6.9%	1.5%	-
Underemployment rate[6]	9%	9%	-
Hours worked[7], per week	48.4	47.2	-1.2(*)
Mean earnings per worker[7,11]	2,553	3,364	0.9%
Median earnings per worker[7,11]	1,739	2,223	0.3%
Median hourly rate,[12] Tk/hour	8.8	11.3	0%
Labor income (% of total income)	74%	74%	3.7%
Literacy rate,[8, 9] %	47%	55%	-
Years of education[9]	3.7	4.4	+0.7(*)
Poverty rate	49%	40%	-9%p(*)

Notes: (*) Absolute change over five year period; (1) from WDI database; (2) aged 15-64; (3) in economic activity during past year; (4) within 15-64 year category; (5) not reliable, ILO definition, based on 7-days reporting period; (6) % of employed working 20 hours per week or less (yearly equivalent per year); (7) in all activities; (8) Able to read and write; (9) Average for working age population. Illiterate individuals have been assigned zero years of schooling; (10) Annualized real growth derived from absolute levels, (11) Tk per month; (12) in main activity
Sources: Based on HIES 2000, 2005; World Development Indicators.

11. Underemployment is more common than unemployment, and a better indicator of the status of the labor market. On average, throughout the year, about 9 percent of the employed work less than 20 hours a week (Table 2-1). Underemployment is more prevalent

[8] The female labor force participation rate from Labor Force Surveys (LFS) was reported as 26 percent in 2002/03 and 24 percent in 1999/2000 (World Bank, 2008d). The LFS-HIES difference may be partly due to the fact that HIES may not account fully for female unpaid work in crop and non-crop production, cottage industries, small trade, and farming. Almost half of the women counted as economically active in LFS are unpaid family workers.

among women and in rural areas, primarily due to seasonality. On the whole, the people of Bangladesh seem to work long hours – particularly men and urbanites – with an average of more than 47 hours a week.

Occupation types and characteristics

12. Labor income constitutes about three quarters of the total income, which is within a range typically found in other countries, and its sources are about equally divided between wage employment and self-employment (Table 2-1, also refer to Annex 2, Table A-2.1 for paragraphs 12-15). There are four distinct types of jobs that people are engaged in, namely: (i) daily labor or daily wage labor, (ii) salaried jobs, (iii) non-agriculture self-employment, and (iv) farming or "self-employment in agriculture."

13. Daily wage labor, which accounts for about a third of all workers, consists of daily wage employment in agriculture (recruited mostly from the rural landless) and outside of agriculture. Usual activities include harvesting, construction work, rickshaw-pulling and so on. The variation in wages is minimal, the rewards to education are almost non-existent, and very few workers have any education. Consequently, their income is very low and poverty rates are highest.

14. Salaried jobs – about one-fifth of workers – consist of two distinct groups: those working for the government (or community organizations) and the rest. The former (about 8 percent of all workers) are characterized by relatively high education and very high relative earnings and wages. The latter group, namely private sector salaried employees, earns hourly wages that are not much higher than those of the daily workers. But their hours are more regular and long (over 57 hours per week on average), perhaps to make up for the low wages.

15. The self-employed outside of agriculture – about 20 percent of all employed – consist of individual own-account workers, employers, and those engaged in family enterprises (and employing no outside employees). Among them, employers stand out as a group with much higher earnings, long working hours, and low poverty rates. Income of the self-employed compares favorably with income from salaried jobs in the private sector.

16. Finally, the self-employed in agriculture account for about a quarter of all workers. Land tenancy arrangements are widespread: about 45 percent of the crop-producing households rent-in some of the land that they cultivate, and about 20 percent rent-in all of it. Median earnings for farmers are lower than that of most occupation groups and close to that for agricultural daily wage labor. Subsistence farmers have the lowest earnings among all occupation groups by far.

III. Labor force size, composition and education status

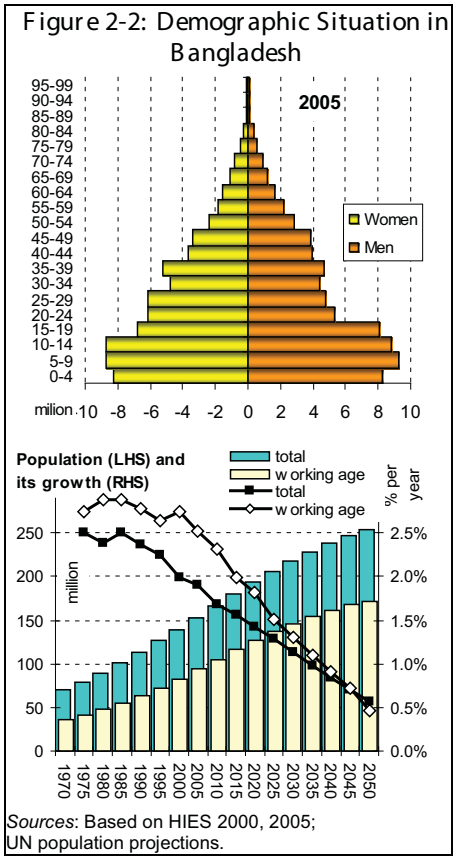
17. A growing population continues to put pressure on the labor market and the demographic transition is one of the key forces shaping the economic and labor market landscape. The population has been growing rapidly for decades, at about 2.5 percent per year.[9] Although this growth has recently moderated to about 2 percent per year, between 2000 and 2005 about 13 million people have been added to the total population (Figure 2-2).

[9] Despite falling total fertility rates, increasing life expectancy and lower child mortality have supported a robust population growth.

Demographic challenges for the labor market

18. The demographic trends in Bangladesh create opportunities as well as challenges. The working age population has been expanding even more rapidly than the total population, growing at rates of 2.5-2.8 percent into the 2000s.[10] While this can be an asset for income generation and growth, it poses a major challenge for the labor market to absorb a large wave of new entrants every year. The "bulge" among the 5-14 age group in the 2005 population (Figure 2-2, upper panel) indicates that the working age population will expand rapidly over the next decade. The UN population projections show that the annual growth rate of the working age population will remain over 2 percent till 2015 even as annual population growth rate slows down to around 1.5 percent (Figure 2-2, lower panel). This will add an estimated 22 million to the working age population between 2005 and 2015.

19. In such an environment migration can be an important employment option, helping to ease the labor market pressures caused by demographics. Government statistics on documented migration estimate that 3.7 million Bangladeshi have emigrated during the past 30 years and about 3 million – or 6 percent of the in-country economically active population – are currently living abroad. Bangladesh is also a rapidly urbanizing society. As seen in chapter 1, the share of urban in total population rose from 20 percent in 2000 to 25 percent in 2005, which suggests a significant rate of rural-to-urban migration.[11]



Changes in skills of the labor force

20. In Bangladesh, all types of labor market outcomes, including type of occupation, total earnings, wages, and work intensity, are correlated with education and skills. Chapter 5 of this report includes a detailed discussion of the trends and patterns in education outcomes and its gender dimensions. A rapid growth in school enrolment, particularly for females (see chapter 5), has had an impact on the quality of the Bangladeshi labor force. The average number of years of completed formal education grew by 0.7 years from 2000 to 2005. Female education levels have increased at a faster rate (by almost 1 year over the period) than male education (0.5 years).

21. Increases in the education level of the labor force have however not been spread evenly across the population – the largest absolute increases have been concentrated amongst the richer population groups (chapter 5). In spite of the progress, only 55 percent of those aged 15-64 can read and write, while the average number of years spent in formal education is only 4.4 years.

[10] In this chapter, the working age population is the population aged between 15 and 64 years. Labor force or, equivalently, the economically active population is the part of the population that either works or is available for work. The unemployed are a part of the labor force that does not work but is available for work. Occasionally, the term "labor force" is used to mean country's (potential) human/labor resources in general – thus it is closer to the meaning of "working age population" – but this should be evident from the context.

[11] The apparent "dent" among prime-aged men in the population pyramid derived from survey data (Figure 2-2) probably reflects missing household members who have migrated and thus remained unreported in the survey.

Men still had over a year more education than females on the average, which matters for women's labor market participation and outcomes.

IV. Structural changes in the labor market

22. Between 2000 and 2005 important structural changes occurred in the labor market. The main processes were: (i) a gradual decline of agriculture and a rise of services; (ii) a movement away from low productivity jobs (in agriculture) to more productive jobs (outside agriculture) including salaried employment; (iii) strong employment growth in urban areas; (iv) a sizeable increase in women's labor market participation. These processes are closely intertwined and related to the rapid reduction in poverty between 2000 and 2005.

Sectoral shifts in the labor market

23. The agricultural sector has declined in importance over time. The share of agriculture in total employment declined from 51 to 46 percent between 2000 and 2005, while total labor income from agriculture grew at only 0.4 percent annually (using HIES, see Table 2-2). Even so, the absolute number of people engaged in agriculture grew by 0.7 percent annually over the same period. Thus agriculture continues to be an important sector, employing almost half of the population and providing over 30 percent of income. Industry's share in total employment stayed almost unchanged at 22-23 percent of total employment during 2000-2005. While manufacturing employment grew by an average of 2.8 percent annually, employment in the construction sector grew at 7.5 percent annually reflecting the rapid process of urbanization going on in the country. A similar trend was seen for incomes – average labor income from manufacturing grew at just above 2 percent annually compared to above 5 percent for construction.

24. The most important contributions to both income and employment came from the services sector. Employment and income in this sector has been expanding by over 5 and 7 percent per year respectively. Trade and catering, as well as the public and community sectors, contributed the most.

Table 2-2: Structure of the Labor Market by sectors, 2000-2005

	Share of total employment		Annualized emplmt growth	2005 Labor income	
	2000	**2005**		Share in total	Annualized growth[1]
Total	**100%**	**100%**	**2.8%**	**100%**	**3.7%**
Agriculture	51%	46%	0.7%	32%	0.4%
Industry	22%	23%	3.9%	27%	2.9%
o/w manufacturing	*18%*	*18%*	*2.8%*	*20%*	*2.1%*
o/w construction	*4%*	*5%*	*7.5%*	*5%*	*5.1%*
Services	27%	31%	5.4%	41%	7.4%

Notes: (1) Of total income originating in a given sector
Sources: Based on HIES 2000, 2005; World Development Indicators.

25. There has been a shift away from what is seen as low productivity employment (mainly in agriculture) into more productive, often salaried, employment (see Annex 2, Table A-2.1). As landless daily labor continued to move from rural to urban areas, the absolute number of daily wage workers in agriculture fell, while the share of those outside agriculture increased. However, the most robust trend was an increase in salaried jobs, where employment grew by almost 5 percent per year and real incomes by over 7 percent. These increases took place predominantly in the private sector – although a non-negligible contribution came from women newly employed in the public sector.

26. The non-agricultural self-employment sector appears to be undergoing a gradual consolidation – mainly due to an outflow from low-productivity own-account self-employment

into salaried employment and towards micro and small enterprises. Between 2000 and 2005, the extent of self-employment per household has fallen by some 10 percent.[12] While own account self-employment has declined in importance, employment and income in family enterprises have grown rapidly – at 6 and 8 percent average annual rates respectively (Annex 2, Table A-2.1). Women are seen to be increasingly taking part in household businesses (see below).

Urban and rural trends

27. Urban areas are undergoing strong growth. Between 2000 and 2005 the urban population grew from 20 percent to 25 percent of the total population and, accordingly, the urban labor market has been expanding rapidly (total income grew by 7.7 percent per year, or 1.3 percent in per capita terms). Currently about 40 percent of labor income originates in urban areas – an increase from 32 percent in 2000. Salaried employment, particularly in the private sector, was a key driving force. Still, self-employment remains the main source of income.

28. Income generation in rural areas has been aided by the expansion of non-farm activities. In 2005, the rural non-farm sector accounted for 55 percent of income and employment in rural areas. In contrast to previous decades, this change came about in large part through the expansion of salaried and wage employment in the non-farm sector, rather than that of individual self-employment.[13] The rural non-farm sector is important for poverty reduction – poverty rates among households in this sector are as much as 10 percentage points lower than for the rest of the rural population – and is expected to continue to be so, given the limited availability of land for cultivation.

Women and the labor market

29. The most dynamic changes in the labor market have occurred among women (see Table 2-3). Between 2000 and 2005, female employment grew at 4.3 percent per year and the total income generated by women grew at over 10 percent a year. Hours of work by women have increased significantly, by 3.5 hours per week, compared with a decline for men of 1.9 hours.[14] Higher than average growth of wages has also contributed to the increase in women's income.

Table 2-3: Men and Women in the Labor Market

	Men			Women		
	2000	2005	Annualized real growth[1]	2000	2005	Annualized real growth[1]
Labor force						
Employment rate, %	82%	82%	2.6%	11%	12%	4.3%
Years of education	4.5	5.1	+0.5(*)	2.9	3.8	+0.9(*)
Earnings and hours						
Median earnings	1,918	2,398	-0.1%	625	1,000	4.9%
Median hourly rate	9.4	11.8	0.0%	4.4	6.9	4.6%
Hours worked	49.5	47.6	-1.9(*)	40.1	43.6	+3.5(*)
Job types	*shares*			*shares*		
Daily labor	33%	32%	2.3%	33%	26%	-0.7%
Salaried	18%	20%	4.5%	35%	36%	4.8%
Non-agric. self-empl.	22%	20%	1.0%	10%	13%	10.2%
Agriculture self-empl[2]	27%	28%	2.9%	22%	25%	7.5%
Income shares & growth	95%!	93%	3.2%	5%	7%	11.6%

Notes: (*) Absolute change over five year period; (1) For employment rates and shares of job types figures are derived from absolute numbers. (2) Growth of agricultural self-employment for women is likely to be slightly overestimated due to data incomparability.
*Source: B*ased on HIES 2000, 2005.

30. Sixty percent of new jobs for women during this period were created in urban areas, with nearly half of work in salaried employment in the private sector, typically in the textile and apparel industry. Although manufacturing remains important, in the 2000s much of the additional

[12] Total non-agricultural self-employment has grown by an annual average rate of 1.6 percent even as per household figure has fallen, due to increase in number of households from 2000 to 2005 (see Annex 2, Table A-2.1). The share of non-agricultural self-employment in total employment has fallen from 21 to 20 percent.
[13] As seen in paragraph 26, incomes and employment in individual (own-account) self-employment appear to be declining.
[14] The growth in hours worked for women might be somewhat overestimated due to data incompatibility in this area.

employment growth came from other quarters. First, the public sector has been actively recruiting women (mainly as teachers and health workers);[15] second, their participation in self-employment, particularly as members or owners of household enterprises, has been expanding. Women are increasingly participating in household businesses; the share of firms with female members grew from 5 percent to 9 percent between 2000 and 2005. Women are somewhat more likely to use formal channels as primary sources of financing, which may be a consequence of the gender preference of microcredit schemes in Bangladesh.

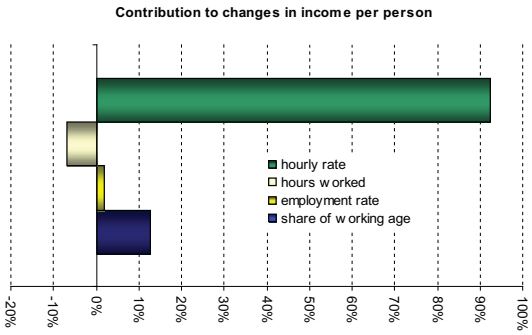
31. However, shifts towards greater labor market participation among women were concentrated among better-off and more educated households. This weakens the pro-poor impact of these changes. For example, the number of working women with some education almost doubled over the period, compared with almost no growth for those with no education. Again, this is unlike previous increases in female employment associated with the rise in the garments industry, which were generally concentrated towards poorer and less educated women.

V. Trends and patterns in earnings and wages

32. Average earnings per worker (as derived from HIES) have been growing by a gradual 0.9 percent a year. However, real income per *capita* has been growing twice as fast (1.9 percent per year) owing to an increase in the share of people working. A simple decomposition shows that growth in wage (rates) accounted for 90 percent of growth in total income per capita (Figure 2-3), with increase in the share of working age individuals contributing slightly over 10 percent. Other employment related variables – employment rate and hours of work – had a small and ambiguous impact.[16]

33. Wage inequality has remained stable[17] suggesting that increases in real wages have been relatively evenly spread across the wage distribution. But there is substantial variation in the growth rate of real wages across sectors, divisions and job types. Growth has been led by increases in real income from salaried employment (2.4 percent per year), particularly in the private sector (3.4 percent). Among sectors, earnings increased noticeably only for workers in services, while earnings in agricultural activities (as well as in manufacturing and construction) seems actually to have fallen slightly in real terms. Among provinces, growth of earnings ranged from a decline of 2 percent annually in Barisal to an increase of 5 percent per year in Sylhet.

Figure 2-3: Income Growth Decomposition 2000-05



Sources: Based on HIES 2000, 2005

Women's income and wages

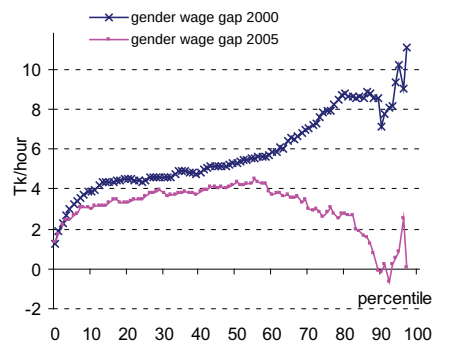
34. For women, incomes from salaried employment have increased at a rapid rate; in five years, the average income for women in this type of employment has increased by about 60 percent. Oaxaca-Blinder decomposition shows that changes in characteristics, namely the

[15] This may be in part due to quotas for women being introduced in the public sector. For example, the primary education ministry recently recruited an additional 14,000 teachers, around 60 percent among who were women.
[16] See Annex 2, section II for a brief technical note on the decomposition.
[17] Gini coefficient of individual wages rose from 0.49 to 0.50 over the period, which is not statistically significant.

increase in education level, accounted for between 30 to 70 percent of the overall change in women's wages over the period.[18]

35. The large gender wage gap is gradually narrowing, though mainly for the better-off, salaried workers. Average male wages are significantly higher than female wages. Interestingly, the pattern of wage gap seems to have changed. Whereas in 2000 the highest disparities were recorded at the top end of the distribution, the situation has reversed over the period (Figure 2- 4).

Figure 2- 4: Gender gap for wage workers



Sources: Based on HIES 2000, 2005

What factors explain differences in earnings?

36. To better understand what accounts for differences in levels and growth of wages, earning functions were estimated for the Bangladeshi labor market and various sub-population groups. As expected, the main factors explaining the differences are (i) education; (ii) gender; (iii) sector; and (iv) geographic location (see Annex 2, Table A-2.2).

37. *The returns to (an additional year of) education* are, on average, between 5.5 to 6 percent (Table 2-4).[19] They are higher for women, probably reflecting the relative scarcity of education within this group. The returns are also lower in rural areas, where the prevailing production techniques do not reward skills very highly. They are particularly low for the daily labor sector, reflecting the "commodity" character of labor exchanged in this segment of the market. Overall, returns to education in the labor market have remained stable since 2000. Female rates seem to have declined slightly, perhaps due to increases in education among female labor over the period.

38. The educational wage premium increases with the level of education (Table 2-4). Furthermore, rates of return to education in countries around the world and in Asia – ranging from a high of 20 percent for primary education to a low of 16 percent for secondary education – are well in excess of the returns reported for Bangladesh. Among South Asian countries, only India records a lower return to primary education (i.e. 3 percent).[20]

Table 2-4: Returns to education, 2005

Additional year, in percent	**total**	**male**	**female**
Average	5.5**	4.9**	7.0**
of which in			
Primary	3.6**	2.9**	3.9**
Junior secondary (SSC)	6.2**	5.6**	9.2**
Senior secondary (HSC)	5.9**	7.3**	4.4**
Undergraduate	9.2**	8.6**	8.4**
Daily wage sector	2.1**	2.2**	1.0**
Public sector	6.5**	5.9**	8.4**
Urban areas	7.7**	7.2**	9.3**
Average 2000	6.0**	4.6**	8.8**

Sources: Based on HIES 2000, 2005

39. *Women are at a disadvantage in the labor market*, earning as much as 60 percent less than men in the same type of work. Oaxaca-Blinder decomposition shows that in 2000, about 30 percent of the overall gender wage gap could be explained by differences in the characteristics of male and female wage employees. The remaining two thirds of the gender gap was due to "differences in coefficients," which in this type of analysis is often ascribed to gender discrimination.[21] By 2005, the difference in male and

[18] See Annex 2, section II for a brief technical note on the Oaxaca-Blinder decomposition referred to here.
[19] The exact coefficients depend on the detailed specification, as well as cost of living and other adjustments.
[20] Although the data used in the India study is for 1995. Interestingly, *primary* schooling has the highest return in most countries, but not in South Asian countries.
[21] Obviously, a much more sophisticated analysis than ours is needed to attribute these results to "true" discrimination.

female wages due to characteristics had disappeared and the remaining gender gap consists almost entirely of the unexplained component. Women have significantly better opportunities in urban areas and in salaried employment, particularly in the public sector jobs.[22] Therefore, the current urban shift provides a chance for women to access productive employment on better terms.

40. *Public sector wage workers earn substantial premiums* in the labor market, and although there is some evidence that these premiums have been declining in recent times, a public sector worker still earns wages over 50 percent higher than an equivalent worker in the private sector, not counting other benefits associated with public sector employment.[23] The structure of salaries in this sector is flatter than average. The public sector premium is significantly higher for women. Public sector premium is also higher in rural areas, where government jobs are less prevalent.

41. *Location matters in determining wages*. Regional premiums in wage/earnings regressions vary from between -8 percent (Rajshahi) and 15 percent (Chittagong), relative to the reference district (Barisal). Dhaka and Sylhet are the other two divisions with positive premiums. The location premiums on wages are broadly consistent with the regional pattern of poverty and growth discussed in Chapter 1. The importance of location is discussed in more detail in section VIII in the context of systematic differences between the eastern and western parts of the country.

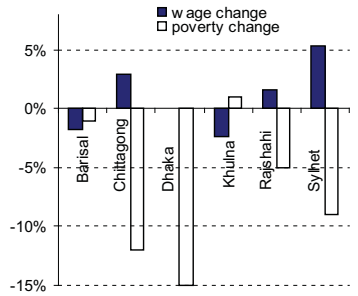
VI. Poverty and the labor market

42. The poor depend on labor income for their livelihood. Somewhat expectedly for a country without extensive social safety nets, lack of labor income is associated with high risk or poverty. Importantly, the poor derive a greater share of their income from labor than the non-poor (i.e. 85 percent for the bottom quintile compared with 70 percent for the highest), which underscores the importance of adequate returns to labor for poverty reduction.

Poverty and type of employment

43. About a half of poor workers are concentrated in the daily wage sector; accordingly, the poverty rate in this sector (60 percent) is very high. The association between poverty and employment as a daily wage laborer is shown clearly in Chapter 3 through a multivariate analysis identifying the correlates of poverty. Outside daily wage, poverty incidence (25-30 percent) is similar between job categories; the better off tend to work in salaried employment or in self-employment outside of agriculture. Household endowments of human and physical capital (especially land) are important determinants of poverty – primarily because these endowments are closely associated with employment types of household members (see Chapter 3).

Figure 2-5: Wage and poverty changes by division, 2000-2005



Source: HIES 2000, 2005.

44. Growth in labor income is commonly associated with poverty reduction. Overall, the correlation between poverty reduction and growth in earnings across sectors, job types, skill groups, and divisions is positive. For example, divisions with higher wage increase between 2000 and 2005 also experienced more reduction in poverty (Chittagong, Sylhet in Figure 2-5).

[22] As evident from a much smaller (negative) gender coefficients in wage regressions within these sub-markets.
[23] These findings may explain the massive oversubscription for public sector job vacancies.

However, Dhaka division seems to be an outlier with marginal real wage gains and a large decline of poverty.

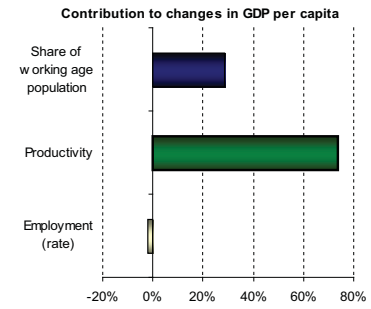
Growth, productivity and employment

45. Examining the relative importance of labor productivity versus employment growth in explaining GDP growth is useful to see whether the poor have been able to take advantage of opportunities in the growing sectors. Increasing productivity (value added per worker) has accounted for as much as 75 percent of the growth of GDP per capita (Figure 2-6, left panel). Although as mentioned earlier, growth in Bangladesh was accompanied by the creation of 5.6 million new jobs between 2000 and 2005, the employment rate (the share of employed among the working age population) did not change significantly, and its contribution to the growth in GDP per capita was nearly zero. An increase in the working age population as a share of the total population (i.e. the fall in dependency ratio) accounted for around 25 percent of the growth in per capita GDP.[24]

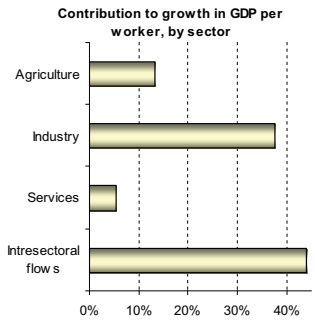
46. Productivity growth has been strong in the industry sector, with some growth occurring in agriculture (Figure 2-6, middle panel). In services, productivity grew more slowly than elsewhere, which is a typical finding across countries. On the other hand, the level of productivity in services is the highest among all three sectors, while the level of productivity in agriculture is very low.

47. About half of the total productivity increase can be associated with intersectoral mobility of workers (Figure 2-6, middle panel). The most important channel is the outflow of low-productivity daily wage jobs in agriculture to (mostly daily wage) jobs in services – a phenomenon related to rural-urban migration and expansion of non-farm employment. Within industry, the manufacturing sector did not expand its employment, pursuing productivity gains instead, which was likely necessitated by the garment sector having to face greater international competition after the expiry of favorable MFA quotas. On the other hand, the construction sector, driven by ongoing urbanization, has been creating new jobs and positively contributed to the overall increase in GDP per capita.[25]

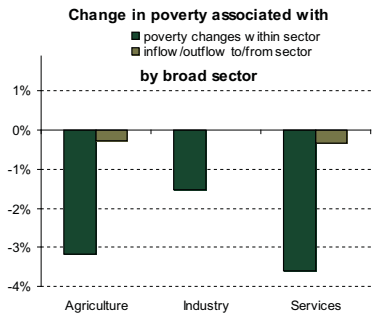
Figure 2-6: Decomposition of Changes in GDP per Capita into Components



Productivity by Sector



Poverty Changes by Sector



Source: HIES 2000, 2005

Contributions of different sectors to poverty reduction

48. How far have the poor benefited from the expansion of growing sectors? The question is potentially important, given the policy debates on the trade-off between focusing interventions on

[24] See Annex 2, section II for technical details on the decomposition of change GDP.
[25] See Annex 2, section II for a brief technical note on the decomposition of productivity change.

the sectors where most of the poor are found (such as agriculture) and focusing more on higher-earning sectors so that these are able to accommodate more workers from low-paying sectors. An indirect way to examine this is by decomposing overall poverty reduction during 2000-2005 into changes in poverty within specific sectors, and that due to changes in the share of the people "attached" to each sector.[26]

49. The analysis shows that a large proportion of the poverty reduction between 2000 and 2005 took place *within* economic sectors (Figure 2-6, right panel). Services, which grew fastest, accounted for the highest share of poverty decline. Despite slow growth, the contribution of agriculture was significant because of the size of the sector. In terms of intersectoral flows, the flow from agriculture into services had a small but non-negligible role in poverty reduction – consistent with how intersectoral mobility of workers contributed to productivity increases.[27] The changes between 2000 and 2005 suggest that while raising productivity in agriculture is critical for reducing poverty, growth of other higher-productivity sectors is also important for sustained poverty reduction – all the more because productivity increase in agriculture would be hard to achieve beyond a point given the shortage of land and the large share of the workforce employed in this sector.

VII. Labor market outcomes and lagging regions

50. As seen in chapter 1, between 2000 and 2005, there has been a sizable reduction in poverty in the divisions of Dhaka, Chittagong, and Sylhet, which are mostly in the eastern part of the country and almost no poverty reduction in Khulna, Barisal, and Rajshahi that are in the west. Taking each region as a whole, poverty rate fell from 46 to 33 percent in the East compared with a decline from 53 to 50 percent in the West (Table 2-5).

Table 2-5: East-West differences in basic labor market features

	2000	2005	
Working age population, % of total			**growth**[1]
East	55	58	2.9 %
West	58	60	2.8 %
Urbanization, % of total population			
East	25	30	5.7 %
West	13	17	7.9 %
Years of education, (aged 15+)			
East	3.6	4.5	0.9 y
West	3.6	3.9	0.3 y
Employment, millions of people			
East	20.7	24.2	3.1 %
West	16.8	18.9	2.4 %
Employment rates, (%, aged 15-64)			
East	50.3	50.9	
West	53.5	52.5	
Labor income, % of total income			**growth (real)**[2]
East	70	71	4.6 %
West	80	78	2.2 %
Nominal wages[3]**,** average Tk/month			
East	2,820	3,789	1.5 %
West	2,224	2,821	-0.1 %

Note: (1) y-years, over 5 years, %-annual growth rate; (2) annual growth in *real* terms; (3) *nominal* labor income/month
Source: HIES (2000, 2005)

51. Labor market differences are just as important in explaining the East-West gap as they are in helping understand overall poverty reduction. Table 2-5 shows the basic characteristics of the labor force in the two regions, which are not very different. The working age population has grown at similar rates in both regions between 2000 and 2005. Both regions are undergoing rapid urbanization, although the East was still almost twice as urbanized as the West in 2005. Accumulation of human capital appears to have been slightly higher in the East, with average years of education (among those above age 15) improving by one year in the East during 2000-2005 compared with 0.3 years in the West, although there is no significant East-West gap in levels of human capital (see chapter 5).

[26] See Annex 2 for a brief technical note on the decomposition of change in poverty.
[27] In an analogous decomposition using job categories, the results are consistent with those from decompositions using sectors: most of the poverty reduction took place within categories, with comparable contributions from wage and non-wage employment; inflows into salaried jobs played a small but key role as well.

52. Employment grew in both regions – somewhat faster in the East – generally in step with population growth. Employment rates are comparable and have not changed much over the period. The share of labor income in total income in the East is significantly lower than that in the West (Table 2-5), which likely reflects better access to other income sources in the East, particularly self-employment and foreign remittances.

53. The most significant East-West differences are in evolution of wages and structure of the economy. Real wages have been growing robustly in the East, while they have stagnated in the West (Table 2-5). Total labor income growth in the East was twice that of the West (Table 2-5). More disaggregated analysis shows that the slow growth of wages in the West is mostly explained by stagnation in the urban areas.

54. In terms of economic structure, the West derives a larger share of income from agricultural activities, compared to the eastern part of the country where services dominate (Table 2-6). Labor markets and the types of jobs they offer are also very different between regions. In the East, salaried jobs dominate, while in the West farming remains an important activity and the share of low-paid daily waged workers is high (Table 2-6). Moreover, these differences seem to have been reinforced between 2000 and 2005. In the East, growth of salaried employment and total income from salaries was rapid, while the structure of the labor market in the West was relatively static.

Table 2-6: **Employment** and **income**

	Employment			
	Structure (2005)		**Growth 2000-05 (%)**[1]	
Sectors	East	West	East	West
Agriculture	40	53	0.9	0.5
Industry	26	20	4.0	3.8
Services	33	27	5.3	5.6
Job types				
Daily wage	26	39	0.6	3.3
Salaried	28	13	5.4	2.6
Nonagr self-empl	22	17	2.7	-0.1
Agric self-empl	24	31	4.1	2.7
	Total labor income			
	Structure (2005)		**Growth 2000-05 (%)**[2]	
Sectors	East	West	East	West
Agriculture	25	43	-0.1	0.8
Industry	26	21	3.4	1.7
Services	48	37	8.6	4.8
Job types				
Daily wage	16	22	0.6	3.2
Salaried	33	21	8.6	4.4
Nonagr self-empl	36	26	4.7	-1.6
Agric self-empl	14	31	0.8	3.5

Note: (1) annual growth in emplmt for each category; (2) annual real growth in total labor income for each category
Source: HIES (2000, 2005)

55. Regression analysis to identify the determinants of wages[28] finds higher returns to education in the East than in the West, with the difference being even larger for urban areas. The gender disadvantage and public sector premium are lower in the East, which likely point to better integration of the labor market. A significant "East premium" (or West's disadvantage) for both years reflects the large East-West gap in wages even after netting out the effect of individual factors that matter for wages. Location matters for wages mainly due to a better economic environment on the average in the East, due to factors like better connectivity to markets, access to infrastructure and agglomeration economies (see Chapter 4). Because of these factors, the East is better able to attract higher-return economic activities, resulting in large differences in the economic structure of the two regions as shown above.

56. Interestingly, the "urban premium" for wages is significantly smaller in the West and has been declining from 2000 to 2005. This, along with relatively low returns to education in urban areas of the West, would suggest that agglomeration effects (that would lead to concentration of high-return economic activities in urban areas) are much stronger in the East. Chapter 4 examines this in greater detail and identifies the lack of "growth poles" in the West as an important factor contributing to its lagging economic performance.

[28] For results of the earning function estimations for East and West, refer to Table A-2.3, Annex 2.

VIII. Conclusion – summary of main findings and implications for policy

57. Urbanization and the associated expansion of the services sector have been important factors in shaping the development process in Bangladesh in the 2000s. The urban population is growing at a rate triple that of the national average. This is accompanied by a shift away from agriculture, with daily wage labor in agriculture migrating to urban areas to take up non-agricultural work largely in the services sector. This raises new challenges for poverty reduction efforts, particularly in urban areas.

58. Growth has been broad based and led by private investment. Labor market activity indicators, such as labor force participation rate and employment rate remained unchanged, reflecting the fact that employment creation was just about enough to keep pace with the size of the working age population. Recent increases in income per capita are linked predominantly to rising labor productivity and labor incomes. Within agriculture, growth was linked to rising labor productivity – albeit from a low initial level – and rising labor productivity was a key contributor to growth in the manufacturing sector as well. Intersectoral mobility of people, primarily from agriculture (especially agricultural daily wage workers) to services contributed significantly to growth as well, along with rising employment in the services sector.

59. Although some long-standing segmentation is seen between public and private employment and between rural and urban areas, the labor market is relatively flexible and facilitates Bangladesh's economic transition. Firms do not report particular problems with the hiring and firing of workers and their staffing level is believed to be close to optimal. If labor market regulations are not a main barrier to creation of good jobs, addressing barriers outside the labor market could be a more effective a policy instrument. Thus, in addition to investment in productive assets (human capital and credit), building a conducive environment for the returns to these assets (such as stable macroeconomic environment, trade openness, infrastructure, and rule of law) would also improve labor market outcomes like employment and earnings.

60. Increases in real wages have been evenly spread across the wage distribution, which partly explains why consumption inequality remained stable from 2000 to 2005. Growth in earnings however varied substantially across job types, sectors and regions – highest among salaried employees in the private sector and in the services sector. Across divisions, the pattern of earnings growth is consistent with the regional variations in poverty reduction noted in chapter 1.

61. The widening East-West gap in poverty in Bangladesh can be better understood in light of stark regional differences in wage growth and job-creation patterns. Wages have grown robustly in the East but stagnated in the West. Both East and West managed to create employment to match the rise in working age population, but with important differences. The East created many more "good jobs" – that are more stable (salaried), better paid, and in a robustly growing nonfarm sector (including self-employment). In contrast, a large proportion of the jobs created in the West consisted of daily wage work or agricultural self-employment. Lower gender and public-private differences in earnings in the East indicate a better-functioning labor market with fewer distortions. A smaller and declining urban premium for wages in the West suggests weaker agglomeration effects – likely related to the absence of urban growth poles and poor connectivity to markets. Chapter 4 includes a detailed discussion of how differences in connectivity and market access contributes to the regional economic divide and what that implies for the design of policies to reduce this divide.

62. While intersectoral or rural-urban flows have played some role in poverty reduction, most of the poverty reduction has taken place *within* economic sectors and rural/urban areas. Poverty

reduction efforts would therefore need to focus on areas and sectors where the poor currently are. This will involve promoting continued productivity growth in agriculture where wages remain low. Diversification into higher value added crops, use of new seed varieties, and technology are key in this respect. Promoting nonfarm employment among rural households would help raise incomes and reduce poverty, since poverty incidence is significantly lower among rural households engaged in the nonfarm sector than among other rural households.

63. The importance of nonfarm employment, in rural and urban areas alike, underscores the need for rapid job creation in services and manufacturing sectors to reduce poverty in Bangladesh. Large-scale job creation is all the more critical given the demographic transition in Bangladesh, which would imply a large number of new entrants (estimated as more than 20 million) in the labor market between 2005 and 2015. Services had the largest contribution to poverty reduction, through rising employment (including attracting labor from agriculture into this sector) and labor incomes. This suggests that the services sector, particularly in urban areas and in the private sector, has large potential to provide employment opportunities for the poor. Higher employment growth in manufacturing sector beyond what has been seen in the first part of the 2000s would also be needed to sustain the pace of poverty reduction and provide employment to the large number of new entrants to the labor market.

64. At the household level, the main determinant of labor market outcomes is endowment in productive assets – both physical as well as financial capital and human capital. First, although impressive expansion of microcredit is helping many entrepreneurs (many of them women), lack of capital for small and medium enterprises remains an issue. Second, improvements in levels of education (mostly secondary level) have also been an important factor in the growth of real wages between 2000 and 2005. The impact of education on wages has been particularly high for women and helped to narrow the gender wage gap slightly. However, returns to education in Bangladesh are low compared with other countries, probably reflecting differences in education quality – which makes improving the quality of education a crucial policy priority.

65. Women are playing an increasingly important role in the Bangladesh labor market. Their participation rates, working hours, levels of education, and income levels have all increased at a much faster pace than those for men. Moreover, an increasing share of women's income derives from salaried employment as well as from household enterprises, often with more formal sources of financing. At the same time, their labor market participation remains small by international standards, with much potential for improvement. Furthermore, growth in women's participation and incomes has been concentrated in the middle and higher end of the income distribution, rather than among poorer women.

66. Improving employment among women in Bangladesh will have a significant impact on aggregate income growth and household poverty. The recent country gender assessment (World Bank 2008d) makes a broad argument in favor of linking the discourse on women's employment to the macroeconomic policy agenda, given the vast income growth potential that remains untapped due to the low participation of women in the workforce. The findings of this report also suggest the need to focus in a number of specific areas, including better enforcement of existing laws, continued focus on higher education for women, and creation of support systems to facilitate women's participation in the labor force (Box 2.1). Improving education outcomes among women and the current urban shift in economic activities hold promise for the future, in terms of providing opportunities for women to take part in productive employment on better terms.

Box 2.1: Improving women's participation in the labor force: implications for policy

Firstly, given that there are serious data and measurement issues with regard to women's employment, improving the labor market knowledge base would be critical for evidence-based policymaking. *Secondly*, there is a need to enhance the legal framework and enforcement mechanism for existing laws. These measures would include enforcing equal pay for equal work (as mandated in the Constitution) and laws related to equal opportunity, and creating a better legal framework to safeguard rights in the service sector, particularly domestic services since housemaids constitute a large share of all employed women. *Thirdly*, a continued focus on higher education and technical education for women would enhance women's employment and returns from the labor market, given that both participation and wages correlate positively and strongly with education. *Fourthly*, improving women's productivity in agriculture would be important, since a large share of women are employed in agriculture or related occupations. *Fifthly*, given the low participation of women in wage labor, there is a need to better understand the constraints to women's participation in large public employment programs in order to enhance their participation in these programs. *Finally*, incentives and support systems need to be created to encourage women to enter and stay in the labor market. This would involve facilitating mechanisms for childcare (like mobile crèches) and improving access to information about jobs.

Source: "Whispers to Voices: Gender and Social Transformation in Bangladesh," (World Bank, 2008d)

3. Profiling the Poor: Characteristics and Determinants of Poverty

1. This chapter explores the multidimensional nature of poverty and the factors that are associated with poverty in Bangladesh. Income or consumption poverty is often strongly associated with attributes such as demographics, education, land ownership, occupation and employment status. Beyond individual household attributes, the characteristics of the area a household is located in can also affect the economic status of households. The exact combination of factors that keeps a household below the poverty line is unknown, but a comprehensive analysis of the key correlates can suggest specific constraints to household incomes that in turn inform policy interventions to reduce poverty.

2. How poverty is related to characteristics of households and areas where a household is located and how these relationships have changed over time also help understand what factors explain the rapid poverty reduction in Bangladesh between 2000 and 2005. Chapter 2 has addressed this question along a key dimension – namely how changes in labor productivity and employment patterns have contributed to growth and poverty reduction. This chapter complements the findings of chapter 2 in a framework incorporating a broad set of household and spatial factors that are likely to influence a household's economic status. Multivariate regressions of household consumption on a range of individual, household, and location-specific attributes help in identifying the key determinants of household welfare and the processes underlying the changes in poverty incidence over time. The chapter also includes an in-depth analysis of the poorest group (extreme poor) of households, to examine the changes in their welfare over time and the factors likely contributing to these changes.

I. Non-income dimensions of welfare – how Bangladeshi households have fared

3. Household welfare is influenced by a range of characteristics other than consumption. Improvements in these indicators would show a positive trend in the wellbeing of the population, going beyond the relatively narrow measure of consumption on non-durable goods. One would also expect these characteristics to be correlated with consumption; households with a higher consumption level are likely to live in a better house, built with superior materials, and equipped with features such as electricity and improved latrine. Therefore, improvements in these indicators over time would also serve as a consistency check for the consumption poverty trends analyzed in chapter 1.

Table 3-1: Trends in basic assets and amenities

	All households		Bottom 5 deciles		Bottom 3 deciles	
	2000	2005	2000	2005	2000	2005
Average real value of livestock (tks)	4280	5281	3222	4653	2623	3919
Livestock ownership (%)	35.2	40.3	33.6	43.3	31.6	42.5
Wall of dwelling (% with cement / CI sheet)	37.7	55.2	21.4	39.5	17.4	33.9
Roof of dwelling (% with cement / CI sheet)	76.4	89.9	68.1	84.2	64.5	81.6
Safe latrine use (%)	52.0	69.3	35.2	55.6	29.4	50.0
Electricity connection (%)	31.2	44.2	14.6	25.4	10.0	20.2
TV ownership (%)	15.8	26.5	3.6	10.1	1.8	6.7
Phone ownership (%)	1.5	12.2	0.1	1.5	0.0	0.9

Source: HIES 2000, 2005

4. A number of non-consumption indicators of welfare show significant improvements between 2000 and 2005, for the general population and the poor alike (Table 3-1). The gains in six key areas like asset ownership, electricity access, safe latrine access, literacy levels, and occupational characteristics – for the general population and the poorest 50 percent of the population – are visually represented in Box 3.1. Earlier work on poverty in Bangladesh shows that poverty and *quality of housing* is closely correlated. For example, households who live in houses with straw roofs are typically extremely poor (Hossain, 1995). It is therefore significant that housing conditions have improved dramatically between 2000 and 2005, with a larger percentage of households with walls and roofs of corrugated iron sheets and cement that are more resilient to adverse weather conditions (Table 3-1). Housing conditions have improved substantially for the poor and extremely poor households as well.

Box 3.1: Improvements in non-expenditure welfare indicators of households: 2000-2005

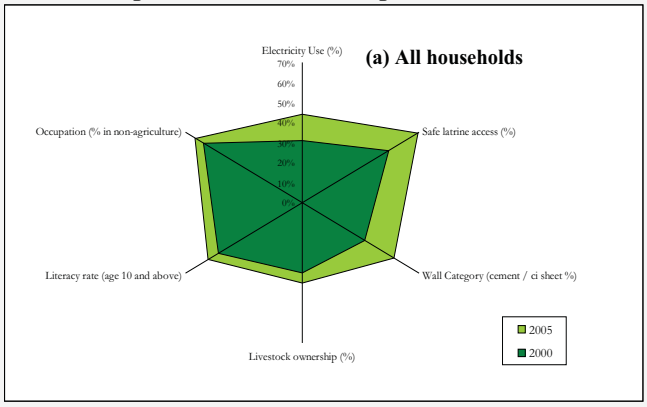


Figure (a) illustrates the improvements in key welfare and asset indicators between 2000 and 2005 in terms of 6 key dimensions of welfare: asset ownership, electricity access, safe latrine access, literacy levels, and occupational characteristics. The boundaries of the hexagon for 2005 lie outside those for 2000, which indicates improvements along all six dimensions.

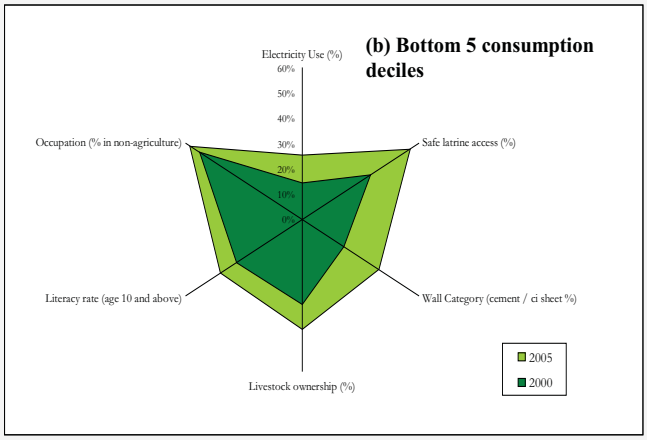


Figure (b) indicates that households in the bottom 50 percent of the population made even more gains between 2000 and 2005 along these six dimensions of welfare than did the population as a whole (the bottom 5 deciles roughly represent the poor in 2000, when the poverty headcount rate was 49 percent). In fact, extremely poor households (bottom three deciles) and those near destitution (bottom decile) show robust improvements along all six welfare dimensions between 2000 and 2005 (Annex 3, Figure A-3.1).

Source: Serajuddin et al (2007)

5. Access to hygienic *sanitation* facilities is closely associated with a reduced disease burden and better health outcomes. Between 2000 and 2005, the percentage of households with access to a safe toilet has increased from 52 percent to 69 percent (Table 3-1). At the same time, the differences between poor and non-poor remain significant. In 2005, households who do not have access to safe toilet are nearly twice as likely to be poor than those who do.

6. Also significant is the increase in the share of households with electricity connections, from 31 to 44 percent during 2000-2005 (Table 3-1). That said, most households suffer from regular power outages as there has been virtually no additional generation capacity during this period (World Bank, 2007a). There has also been a sharp rise in the percentage of households with access to a phone (landline and/or mobile) – from 2 percent of the population in 2000 to 13 percent in 2005 – mainly due to expansion of the mobile phone network. This is especially

evident in rural areas, where access to a mobile phone is about 20 times higher than a land line. However, among the poorest 50 percent of the population, phone ownership while rising, remains very low at less than 2 percent.

7. An important household asset, especially in rural areas, is *livestock ownership*. Between 2000 and 2005, the average livestock asset value in real terms increased by about 20 percent for all households. For poorer households (e.g. the bottom five deciles) the increase was almost 50 percent. The increase appears to have come both from existing owners increasing their livestock holdings and from a higher number of households owning livestock.

II. What factors influence the likelihood to be poor?

8. To address the question of what household-specific factors correlate with a household's economic status, bivariate analysis is complemented with multivariate regressions – to measure the relationship between each attribute and household consumption independent of the effects of other attributes. Regressions of (log of) per capita expenditures on a set of household and location-specific attributes are run separately for urban and rural samples.[1] Given that the main objective is to identify how each factor influences a household's economic status, the set of independent variables is limited to those that are likely to be exogenous – more likely to be *determinants* rather than the *results* of a household's per capita consumption. The 2005 results are compared with the corresponding figures in 2000 whenever such comparison is instructive, to get an idea of how the determinants of poverty have evolved over this period and how these changes may have affected consumption poverty.

Household demographics and poverty

9. Cross-country evidence suggests that larger households – who are commonly households with a large number of children – are more likely to be poor (Lanjouw and Ravallion, 1995). This also appears to be the case for Bangladesh – the multivariate regressions for 2005 suggest that number of infants, children and adults are negatively correlated with per capita expenditures in 2005 (Annex 3, Table A-3.1). The negative association is much stronger with number of infants or children than that of adults, and strongest with the number of infants.[2] These results are intuitive in that higher dependency within a household would be associated with higher likelihood of poverty. Table 3-2 shows that poor households had a larger average household size than non-poor households in both 2000 and 2005. This is because the average number of children in a poor household is higher than that in non-poor households which, combined with a slightly smaller average number of adults for poor households, leads to a significantly higher average dependency ratio for poor households.

10. One caveat is important to state and merits more analysis. The strong correlation between household size/composition and poverty is partly a result of the reference welfare measure used in Bangladesh being consumption *per capita*, which does not take into account economies of scale and equivalence scales in consumption (see chapter 1).[3] If these effects were to be incorporated,

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[1] See Annex 3 for a detailed description of the regression models, variables, and results, and Table A-3.1 (Annex 3) for the results with HIES 2005. The model specification follows Ravallion and Wodon (1999), who estimated similar models on HIES data from earlier years. All regression results in this chapter are from columns (1) and (3) of Table A-3.1; the results in columns (2) and (4) are relevant for chapter 4.

[2] In the regressions, an additional child (age 1-14) in the household was associated with around 18 percent lower per capita household expenditures; an additional infant (age less than one) was associated with 20 and 40 percent lower per capita expenditures in rural and urban households respectively

[3] Economies of scale in consumption refers to the fact that larger households are likely to obtain the *same* level of welfare per person with a lower expenditure per capita than a small household, due to the fact that certain types of

the welfare level of large households relative to that of small households would likely turn out to be *higher* than what their per capita consumption suggest. However, given the size of the effect of these demographic variables on consumption, the coefficients are likely to be still significant, albeit weaker than what appears here, *even if* reasonable adjustments for scale effects were to be incorporated. This seems to be supported by the analysis described in section II, Annex 3. The results there indicate that households identified as poor after reasonable adjustments for economies of scale in consumption have on average a larger household size and higher dependency ratio than non-poor households (Table A, Annex 3). The gaps between poor and non-poor, however, become narrower with scale adjustments – this is expected since such adjustment by definition raises the measured welfare of larger households.

Table 3-2: Demographic characteristics of households

	All households		Poor households		Non-poor households	
Demographics	2000	2005	2000	2005	2000	2005
Household Size	5.18	4.85	5.4	5.2	5.0	4.6
Dependency Ratio	0.77	0.69	0.99	0.91	0.60	0.57
Number of children	2.1	1.8	2.5	2.3	1.6	1.5
Number of Male Adults	1.6	1.5	1.4	1.4	1.7	1.6
Number of Female Adults	1.5	1.5	1.5	1.5	1.6	1.6
Head female	0.09	0.10	0.08	0.08	0.09	0.12
Head Non-Muslim	0.09	0.12	0.08	0.13	0.11	0.11
Age of head (years)	44.5	45.3	43.2	43.5	45.6	46.4

Source: HIES 2000, 2005

11. Notably, as seen in chapter 1, a sharp fall in household size from 2000 to 2005 has played an important role in increasing per capita expenditures and reducing poverty. The national average household size declined from 5.18 to 4.85 and the dependency ratio declined from 0.77 to 0.69. The declines in household size and the dependency ratio for poor households were similar to those of the entire population.

12. Besides reflecting a decline in the population growth rate, household size may decline over time also due to household members splitting from a joint family structure or migrating.[4] Table 3-2 however suggests that the decline in household size in Bangladesh is associated with a decline in the *number of children* rather than the number of adults. Therefore the decline in household size appears to represent a more fundamental demographic shift than household splitting or migration. The decline is also consistent with Bangladesh lowering its population growth rate from 2.9 percent per year in the 1970s to 1.5 percent currently. A decline in total fertility rate (TFR) from 7 in 1975 to 2.7 in 2007 is also roughly consistent with the fall in the number of children in survey households from 2000 to 2005.

13. *Religion* and *age of household head* also affect the economic status of households. Households with non-Muslim heads tend to be poorer (Table 3-2), as also indicated by the negative coefficient of the variable in multivariate regressions. Household per capita expenditures increase with the age of the household head, the effect declining with increasing age.

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expenditure are lumpy (rent for housing is one example) or on "shared" or public goods (see Lanjouw and Ravallion, 1995). Equivalence scale refers to adjustments to allow for the fact that consumption requirements are likely to vary by age, gender, sector (urban/rural), and even occupation or climate.

[4] In HIES, any household member who has been away for more than three months is not a part of that household.

14. From Table 3-2, poverty incidence appears to be slightly lower among households headed by women – female-headed households account for 8 percent of poor households but 12 percent of non-poor households. However, regressions suggest a more nuanced story about the association between *gender of household head* and poverty. Among urban households, controlling for other attributes, female-headed households are significantly more likely to be poor (see Box 3.2), while the correlation is insignificant for rural households. The correlation between the gender of the household head and household economic status is also affected by how one distinguishes between *de facto* and *de jure* female headed households (Buvinic and Gupta, 1997). Careful disaggregation by the marital status of female household heads suggest that female-headed households face daunting economic challenges when the head is widowed, divorced, or separated – in other words, less likely to have an adult male in the household (Box 3.2).

Box 3.2: Gender dimensions of poverty

HIES 2005 indicates that around 10 percent of all households are female headed. Upon casual inspection, female-headed households do not appear to be in any significant disadvantage. Such a simple correlation however ignores the distinction between *de facto* and *de jure* female headed households (Buvinic and Gupta, 1997). For example, a household headed by a female because male earning members have migrated (and send remittances) can be quite different in terms of economic conditions from one where the female head is the main earner. Disaggregating female-headed households by marital status of the head illustrates this vividly. In HIES 2005, roughly a third of female household heads are married, 60 percent are widowed and about 7 percent are divorced or separated. The female household heads who are married are likely to have husbands who are migrant workers.[5] Poverty rate is just 16 percent among households headed by married women, compared to 48 percent among households headed by a divorced or separated woman and 37 percent among households headed by widows.

Another indirect way to uncover the relationship between the gender of household head and poverty is by netting out the effect of remittances – a reasonable proxy for the presence of migrant male members in female-headed households. The multivariate regressions (Annex 3, Table A-3.1) show that after controlling for household attributes (including the incidence of remittances) and location, female-headed urban households are likely to have *lower* per capita consumption than male-headed households.

Taken together, the evidence suggests that female headed households face considerable hardships in the absence of adult male *earners* (Serajuddin et al 2007). Even this, however, does not represent the gender dimension of poverty to the full extent – the HIES cannot shed any light on resource allocation among members *within* a household, which is a key factor in determining the economic status of women.

15. Interestingly, adjustment for economies of scale in consumption also affects the association between gender of household head and poverty. With economies of scale above a certain threshold, poverty incidence appears to be significantly *higher* among female-headed households than male-headed households (see section II, Annex 3), which is the opposite of the result with no economies of scale in Table 3-2. This seems to suggest that female-headed households tend to be smaller on the average than male-headed households, which would imply that their average welfare (or poverty incidence) *relative* to male-headed households may be overstated in the absence of scale adjustments for household consumption.

Land ownership and poverty

Table 3-3:Trends of poverty and land ownership in rural areas

	Poverty Rate		*Population Distribution*	
Land size	2000	2005	2000	2005

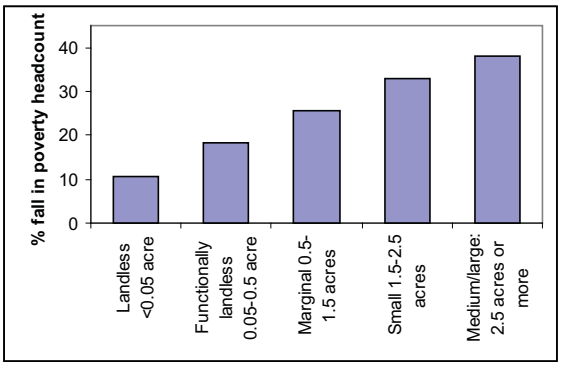
[5] These households have smaller household size and a smaller number of male adults than the average household, suggesting male migration.

Landless <0.05 acre	63.5	56.8	48.0	45.8
Functionally landless 0.05-0.5 acre	59.7	48.8	13.0	15.9
Marginal 0.5-1.5 acres	47.2	35.1	17.5	18.8
Small 1.5-2.5 acres	35.4	23.7	9.2	8.8
Medium/large: 2.5 acres or more	20.7	12.8	12.4	10.7

Source: HIES 2000, 2005

16. Lack of asset ownership is typically an important characteristic of poor households in rural areas. Accordingly, land ownership is the most common targeting criterion for anti-poverty programs in Bangladesh. Poverty rate for the landless was 57 percent in 2005 compared to 24 percent for small landowners and 13 percent for medium/large landowners (Table 3-3). Multivariate regressions show that for rural households, ownership of agricultural land raises household per capita consumption progressively with land size (Annex 3, Table A-3.1). Similar results hold for urban households, albeit with smaller effects that are significant only for land size of 0.5 acres and above – reflecting the lower importance of land for livelihoods in urban areas.

Figure 3-1: % reduction in poverty headcount (2000-05) by land ownership



Source: HIES 2000, 2005

17. A comparison between 2000 and 2005 suggests: (i) no discernible change in land distribution in rural areas; and (ii) positive correlation between land ownership and the rate of poverty reduction. The distribution of land holding has been stable; in both 2000 and 2005, around 61 percent of households in rural Bangladesh have less than 0.5 acres of land (Table 3-3).[6] While poverty rate declined among all land ownership groups, the fall in headcount rate was progressively greater for higher land ownership (Figure 3-1). Poverty fell by 11 percent among landless households and 38 percent among medium/large landowners. Land ownership is thus an important determinant of the likelihood of a household to climb out of poverty. But the fact that poverty incidence declined substantially even among the most disadvantaged (landless) is a testimony to the broad-based poverty reduction in Bangladesh between 2000 and 2005.

Poverty and the educational attainment of household heads

18. Education is a key determinant of wage rates and household income in both HIES 2000 and 2005 (Al-Samarrai, 2007a). Not surprisingly, Table 3-4 shows that poverty rates in both 2000 and 2005 are much lower when household heads attain higher levels of education. The multivariate regressions show that per capita household expenditure increases with education of household head (Annex 3, Table A-3.1). Rural households with heads who have had even minimal education (below fifth grade) have 13 percent higher per capita expenditures than households where the head has no education, and the education "premium" increases to 30 percent when the head has an education level of tenth grade or above. The education premiums – especially for levels of fifth grade or higher – are even larger for urban households, reflecting greater opportunities for educated workers in urban areas.

Table 3-4: Education of household head and poverty

	Poverty Rate	Population Distribution

[6] Land ownership of 0.5 acres or below is also the commonly used targeting criteria for NGO and public safety net programs in Bangladesh.

19. The regressions also show a similar direction of impact of spouse's (of the household head) education on per capita expenditures. The coefficients are smaller than those for the household head's education, but are still sizeable, increase with higher levels of education and higher for urban areas. The highest education level among other members of the household also has similar and strong positive correlation with per capita expenditures.[7] Taken together, these results indicate that the education of *all* household members influence the economic conditions of households, with the household head's education playing the most important role.

	2000	2005	2000	2005
No Education	63.2	54.7	57.3	53.5
Primary	40.3	35.1	15.4	15.5
Secondary	30	21.4	19.9	22.1
Higher Secondary	8.8	8.5	5.9	3.6
Graduate and above	3.1	4.3	1.6	5.3

Source: HIES 2000, 2005

20. A spouse's (of the household head) education has gained in importance as a determinant of household per capita consumption over time. In regressions using HIES 1988-89 (Ravallion and Wodon, 1999), education of spouse beyond "Class 5" was not significant; whereas for both 2000 and 2005, *all* education levels of spouse have positive and significant effects on consumption (Annex 3, Table A-3.1). This is consistent with the progress made by Bangladeshi women over the last 15 years, in terms of increased participation in economic activities (see chapter 2) that has led to higher returns to their education.

21. How has the education level among household heads changed over time? Table 3-4 suggests two important trends from 2000 to 2005: (i) improving education levels, which would be expected to reduce poverty; and (ii) lower poverty incidence in 2005 than in 2000 for the *same* education levels. The proportion of household heads with education of secondary level or above has risen from 27 percent in 2000 to 31 percent in 2005, while that of those with no education has declined from 57 to 54 percent. At the same time, significant poverty reduction has occurred among all education levels – consistent with earlier findings that poverty reduction has been broad-based (see chapter 1).

Occupational status of household head and poverty

22. Occupational status of household members is a key determinant of poverty (as seen in chapter 2). Earlier work in Bangladesh shows that agricultural wage laborers are typically the poorest occupational group (Hossain, 1995); in 2005 this group has the highest poverty rate (66 percent) (Annex 2, Table A-2.1). Nearly a third of total employment is in the daily wage sector. The poverty rate among households when the household head works as agricultural daily wage labor is 72 percent, compared to 60 percent when the head works as non-agricultural daily wage labor (Table 3-5). In comparison, the poverty rate is around 33 percent among the second poorest group – households headed by the self-employed.

Table 3-5: Poverty rate and population share by occupation of household head in 2005

[7] The highest education among other members (besides the head and spouse) is measured by the difference between the maximum education of any household member and that of the head or spouse (whichever is higher). The coefficients are positive and significant in the regressions (the reference group being those with a difference of zero), larger for urban households and increase with the size of the difference.

23. The multivariate regressions confirm that rural households headed by daily wage workers are significantly worse off, relative to the reference group of households headed by self-employed farmers. Non-agricultural self-employment of the household head has a positive and significant effect on welfare for urban households. Salaried employment of household head has a marginal positive effect only for urban households.[8] Finally, the presence (and number) of nonfarm enterprises in the household has a strong association with per capita expenditures. In summary, urban households engaged in non-agricultural self-employment, especially in household enterprises, are significantly better off than those who are not; while employment in daily wage work, especially in agriculture, is strongly associated with poverty among rural households.

	Poverty rate (%)			Population share (%)		
	Rural	Urban	Total	Rural	Urban	Total
Self: agriculture	33	27	33	29	6	23
Self: non-agriculture	38	23	33	17	31	20
Salaried employee	27	17	22	10	31	15
Daily wage: agriculture	72	72	72	19	5	16
Daily wage: non-agriculture	60	55	59	12	15	13

Source: HIES 2005

24. Labor outflow from agriculture to more remunerative non-agricultural employment had contributed to the decline in poverty in the 1990s (Mahmud, 2006; Sen et al, 2007). During 2000-2005 the share of agriculture in total employment continued to fall (see chapter 2). 40 percent of household heads reported agriculture as their main occupation in 2005, down from 46 percent in 2005 (Figure 3-2). At the same time, the proportion of household heads in non-agricultural salaried employment grew the most – consistent with the outflow of labor from agriculture to salaried jobs (mainly in the urban services sector) reported in chapter 2. The shift out of agriculture was even more pronounced for households in the bottom 50 percent (and bottom 30 percent) and contributed to poverty reduction, given that the average daily wage in non-agricultural employment was about 40 percent higher than that in agriculture (Annex 2, Table A-2.1).

Figure 3-2: Main Occupation of Household Head (% of population)

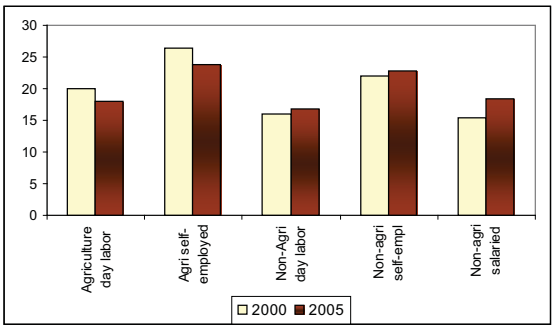
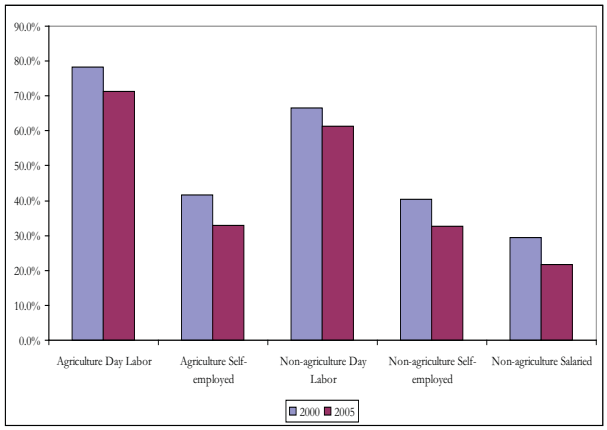


Figure 3-3: Poverty rate (%) by occupation of household heads



Source: HIES 2000, 2005

25. Poverty reduction occurred *within* the agriculture sector as well from 2000 to 2005, as shown by the sectoral decomposition results in chapter 2. This is also seen from the increase in per capita expenditures among households headed by agricultural daily wage workers and farmers. Between 2000 and

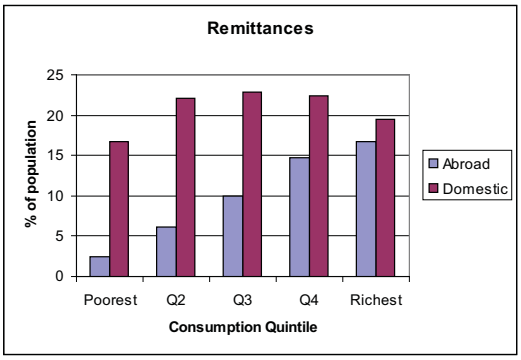
[8] This is consistent with the finding in chapter 2 that salaried employment in the private sector is not highly remunerative in comparison with occupations other than daily wage labor. Average monthly earning of salaried employees in the private sector is lower than that for the self-employed outside agriculture.

2005, poverty incidence declined among households headed by all occupational categories (Figure 3-3). The results in chapter 2, as well as the decompositions later in this chapter, suggest that improvements in labor productivity within all sectors drove the reduction in poverty.

Remittances and poverty

26. Remittances have been a key driver of poverty reduction in several countries and its role appears to have grown over the past decade (World Bank, 2005b). In Bangladesh, central bank data shows that official remittances from foreign countries grew from $2 billion in 2002 to above $6 billion in 2007.[9] In 2006, international remittances amounted to just less than 9 percent of GDP; international and domestic remittances accounted for around 8 and 5 percent of household's total consumption respectively in HIES 2005 data. HIES 2005 shows a strong positive correlation between receiving foreign remittances and household expenditures. While domestic remittances are received by rich and poor alike, foreign remittances go mostly to better off households (Figure 3-4). The poverty rate among receivers of foreign remittances is 17 percent compared to 42 percent among the rest.

Figure 3-4: % of population receiving remittance by quintile, 2005



Source: HIES 2005

27. There are stark geographic disparities in the incidence of foreign remittances. Twenty four percent of households in Chittagong and 16 percent of those in Sylhet received remittances from abroad in 2005, compared to less than 5 percent of households in Rajshahi, Khulna, and Barisal (Table 3-6). This East-West divide has changed little between 2000 and 2005 and roughly mirrors the pattern of poverty in Bangladesh in 2005. The distribution of domestic remittances is greater than even that of international remittances (Table 3-6). The incidence of domestic remittances increased by 12 percent between 2000 and 2005, suggesting increased internal migration.[10]

Table 3-6: % of households receiving remittances by division

	Domestic		International	
	2000	2005	2000	2005
Barisal	37.2	29.5	8.2	5.2
Chittagong	16.1	25.3	20.7	24.2
Dhaka	17.5	13.5	8.2	7.8
Khulna	21.0	24.1	1.8	3.9
Rajshahi	13.6	27.0	2.2	1.3
Sylhet	33.3	10.4	17.4	15.7
Total	18.9	21.1	8.6	8.8

Note: Household weighted
Source: HIES 2000, 2005

28. Regressions show that remittances are associated with higher household consumption for both urban and rural areas; the correlation with foreign remittances is nearly three times larger than that with domestic remittances (Annex 3, Table 3.1). The regression coefficients must however be interpreted with caution, since the direction of the causality is unclear. This is because migration to foreign lands in particular may require large investments upfront, which the relatively better off households are more likely to be able to afford. The coefficient of remittances could be capturing this reverse effect, rather than the *impact* of remittances on household welfare. Recognizing that the large upfront costs of international migration may

[9] The *true* size of remittances, including unrecorded flows, is believed to be larger.
[10] The relatively low incidence of domestic remittances in Dhaka division is likely due to the fact that most domestic migration occur into the urban areas of the division; whereas in Sylhet it is probably due to high rates of international (as opposed to domestic) migration from the division.

constrain poor households, certain innovative actions have been recently initiated by the government (see Box 3.3)

29. International migration for employment appears to have become more prevalent in Bangladesh *even* among those with relatively low education and skills. About two thirds of the officially registered international out-migrants (216,025 individuals) in 2002 were "semi-skilled" or "unskilled" (Siddiqui and Abrar, 2003), suggesting that even the poor are able to gain from the ongoing globalization of labor markets. Furthermore, as returns to employment abroad are relatively high, migration enables these households to not only finance essential consumption of family members in Bangladesh but also make investments that contribute to income gains at home. Sharma (2007) – using survey data from 500 households across 20 communities – finds evidence that households with migrants have higher expenditures *and* save a substantial portion of the remittances they receive (relative to comparable non-migrant households), which can finance investments in productive activities (see Box 3.3).

Box 3.3: Migration and remittances – findings of a study and policy innovations

Based on a survey of 500 households across 20 communities in Bangladesh, Sharma (2007) measures certain outcome indicators for "comparable" migrant and non-migrant households (using a propensity score matching technique). He finds that migrant households on average have higher total per capita expenditures, both on food and non-food items, as well as on consumer durables. The monthly per capita total expenditures of migrant households was higher by Taka 520. Households with migrant members also tend to save a good amount of their remittance receipts (e.g. the mean level of bank-based savings for the migrant household was Taka 32,076 higher than that for non-migrants). However, differences in health and education related expenditures between migrant and non-migrant households were not statistically significant.

While the benefits of migration are quite clear, the large upfront costs involved in gaining access to foreign labor markets – both monetary and time costs – practically shut out this opportunity for a vast number of the poor. This is an area where innovative policy action would be beneficial. Recognizing this, the government of Bangladesh has recently taken certain innovative steps to facilitate organized contract migration from the *Monga*-prone greater Rangpur districts. The microfinance apex organization PKSF has undertaken an initiative to facilitate overseas employment of *Monga* affected ultra-poor by providing financial services. Initially the program will cover five *Monga*-prone northern districts (Lalmonirhat, Kurigram, Nilphamari, Gaibandha, and Rangpur) and will be run by selected partner organizations. Ultra-poor people registered in microcredit schemes in these areas and their family members are eligible to participate in the program. The program will help participants to secure overseas employment, arrange and pay for trainings, and provide loans to cover immigration costs. The program will also provide loans if the participants succeed in securing overseas employment by their own initiative.

The effect of location on household welfare

30. As reported in chapter 1, the incidence of poverty shows a clear regional pattern, which suggests that geographic location of a household plays a key role in determining its economic status. Thus it comes as no surprise to find that most of the location dummy variables (at the level of "old" districts) are significant in the multivariate regressions of per capita consumption, implying that the economic condition of households are indeed influenced by the characteristics of their location (Annex 3, Table A-3.1). After controlling for household characteristics, location of a household in most of the outlying (old) districts (with the sole exceptions of Sylhet-rural and Kushtia-urban) is associated with *lower* consumption relative to Dhaka district in 2005. A critical question in this context – what specific geographic or spatial factors are likely responsible for these unobserved location effects – is addressed in chapter 4.

Microfinance and poverty

31. The microfinance revolution in recent years is important to consider for any analysis of poverty. Inadequate information on savings and credit in HIES makes it impossible to identify the effect of being a microfinance client on a household's economic status. Instead, data obtained from PKSF (Palli Karma Sahayak Foundation, a microfinance apex institution) on changes in microfinance coverage at the sub-district (*thana*) level is merged with HIES data to look at correlations between the *geographic coverage* of microfinance and poverty. Microfinance membership expansion at the *thana* level and household consumption levels are found to be positively correlated (see detailed results in chapter 4). These correlations however do not necessarily imply a causal link between microfinance expansion and poverty reduction; and there are other important caveats that apply due to the nature of data used (see chapter 4).

32. To ascertain the extent of the impact on poverty, panel data on household consumption and microfinance membership over time would be ideal. Even in the absence of such data at the national level, having a more detailed credit and savings module in future rounds of HIES surveys will at least allow the correlations between households' access to microfinance and welfare to be measured.

33. Although the lack of data limits the scope for national level analysis, a number of studies using smaller data sets have found a significant positive impact of microfinance on various dimensions of household welfare in Bangladesh. While differing views exist about the impact of microfinance on consumption poverty of member households, there is consensus to a large degree that microcredit reduces the *variability* of consumption of borrowers and therefore the impact of income shocks (see Box 3.4, and also chapter 6).

Box 3.4: The impact of microfinance on household welfare – evidence from research

The extent to which microcredit has contributed to reducing poverty in Bangladesh has been the focus of several studies. Khandker (2005) finds that both poverty and extreme poverty rates dropped faster among microcredit borrowers than among non-borrowers, with nearly half of the borrowers' poverty reduction attributable to microcredit programs alone. The author also claims that microfinance can account for some 40 percent of the overall reductions in moderate poverty and an even higher reduction in extreme poverty in rural Bangladesh. Pitt and Khandker (1998) showed that for every 100 additional taka borrowed from microcredit programs, annual household consumption increased by 18 taka when women borrowed, compared with 11 taka when men borrowed. Conversely, the study of Morduch (1999) suggests that microfinance had no significant impact on household consumption. However, the undisputed positive contribution of microcredit appears to come from its reducing the variability of consumption of borrowers (Morduch, 1999; Pitt and Khandker, 1998; Zaman, 1999; Khandker, 2005). There is strong evidence (Khandker, 2007) that MFIs have been instrumental on a national scale in the ability of the extreme poor to avoid dire economic consequences in times of serious natural disasters (e.g. the floods of 1998). In addition, these programs' impacts on social indicators (e.g. female education and health status and fertility rates) appear to be strong and robust (Pitt, Khandker, and Cartwright 2006; Pitt and Khandker, 1998; Hashemi, Schuler, and Riley, 1996). Some authors have, however, pointed out that low spillover effects on non-borrowers probably limit the aggregate impact of microfinance on national poverty.

What factors influence transitions in and out of poverty?

34. HIES 2005 has been used so far to identify the key determinants of poverty and track their changes over time, but not to identify the factors responsible for households *transiting* in and out of poverty, which requires panel data that tracks the same set of households over time. However, a household panel survey by International Food Policy Research Institute (IFPRI) can shed some light on this question on a sample that is not representative for the country as a whole, but large

and diverse enough to yield useful insights (see chapter 6 for a more detailed description of this study). The results are broadly consistent with those from the cross-sectional analysis from HIES data above. Education, ownership of assets including land, household demographics, and community-specific or location effects all turn out to be important in determining a household's ability to move out of poverty or being chronically poor, along with the incidence of shocks like illness of earning members (Box 3.5).

Box 3.5: What factors determine dynamic movements in and out of poverty?

An IFPRI study involved re-surveying a sample of households in 102 villages located in 14 districts who were interviewed as part of a baseline survey between 1994 and 2000. The most recent follow-up survey, conducted in 2006-2007, was on a sample of 1,787 core households from the original survey along with 365 households who were "splits" from the original household. Quisumbing (2007) utilizes this survey to examine four groups of households: chronic poor, never poor, falling into poverty, and moving out of poverty. The study examines the determinants of poverty transition categories as a function of household characteristics in the original survey round and on shocks experienced by households. Schooling and assets determine per capita consumption as well as a household being chronically poor or never poor. Having children (below age 15 years) and older household members (above 55 years) significantly increase vulnerability to poverty. Also, foregone earnings opportunities due to illness contribute to poverty, while a lifecycle event like dowry drains household resources significantly. Lastly, location effects in the form of unobserved community characteristics significantly affect movements out of poverty.

35. Qualitative studies can be useful in providing insights on poverty transitions of households – particularly on the *processes* through which various factors influence economic mobility. A companion study of the IFPRI survey (Davis, 2006), which involved interviews in 116 focus groups across 11 districts, yields findings that are consistent with those of the IFPRI panel. Life cycle events, as well as household-specific shocks, are found to be leading causes of economic decline (or stagnation) of households; whereas improvements in living standards are often linked to factors that improve links to product, credit, or labor markets (Box 3.6).

Box 3.6: Causes of progress and decline: what do the poor say?

Davis (2006) finds that while improvements in living standards tend to be gradual, downturns could be gradual *or* radical. Lifecycle events appear to severely impact households. Dowry, illness and accidents, and adverse dependency ratios were often perceived by respondents as important causes of decline, ahead of factors such as flooding, un(or under)employment and debt. Improvements tended to be related to hard work, investment, and enterprise, but commonly accompanied by risk – with the result that the causes of improvement for some people are causes of decline for others. Various forms of business activities, improved agriculture, microfinance loans, salaried work, labor migration, and sons and daughters working, were seen as important factors in improvement.

III. What happened to the extremely poor households between 2000 and 2005?

36. A notable feature in Bangladesh during 2000-2005 is the sizeable decline in the incidence of extreme poverty (the proportion of the population below the *lower* poverty line), from 34 percent to 25 percent (see chapter 1). This seems to be somewhat at odds with the long-held view among many that extreme poverty in Bangladesh is resistant to changes due to the fact that households are trapped in a vicious cycle of low capability and incomes. Low asset base, vulnerability to ecological and life cycle events, and lack of agency have been put forth as explanations for the chronic nature of poverty by various authors (Sen and Hulme, 2005).

37. Reduction in extreme poverty was due to higher than national-average growth in expenditures among the bottom three deciles, which was also equitably distributed *within* this group (see chapter 1). Between 2000 and 2005, average real per capita expenditures of the bottom three

deciles grew at an annual average rate of 2.5 percent, compared with 2.4 percent for the whole population. The expenditure growth is also matched by an overall increase in the standard of living of households in the bottom three deciles along dimensions like asset ownership, access to electricity and sanitation, literacy and occupational characteristics (see Annex 3, Figure A-2.1). Given a national extreme poverty rate of 25 percent, most of the bottom three decile households are still too poor to meet their daily caloric intake requirement. Clearly the malnutrition risks, and that of inter-generational transmission of poverty, are high in light of inadequate diets. However, the tangible improvements in the quality of their lives, relative to the past, including improved ownership of assets and human development, provides some hope for the future.

Figure 3-5: Extreme poverty rate (%) by landownership and occupation of household head

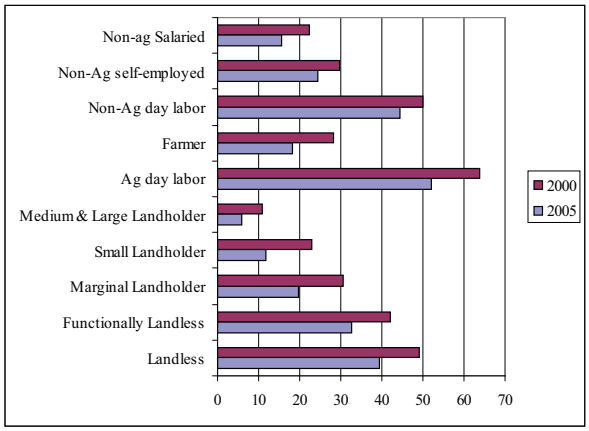
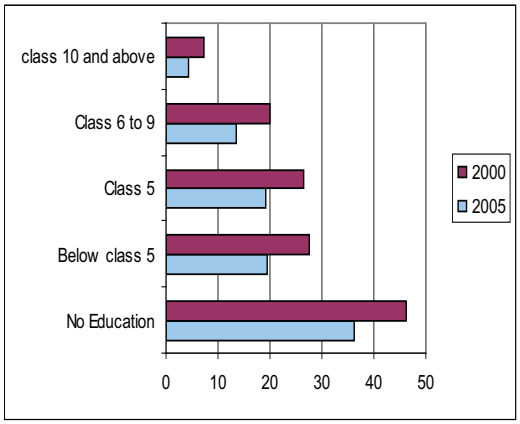


Figure 3-6: Extreme poverty rate (%) by education of household head



Source: HIES 2000, 2005

Characteristics of the extreme poor

38. Landlessness, low education, and employment as daily wage labor are the most significant factors influencing the likelihood of a household to be extremely poor (Serajuddin et al, 2007). The extreme poverty rate is nearly 40 percent for landless households and declines progressively by land ownership, to 6 percent for those owning more than 2.5 acres (Figure 3-5). The extreme poverty rate is 36 percent when the household head lacks any education, compared to just 4 percent for education of high school level and above; 78 percent of the extreme poor live in households where the head has no education (Figure 3-6). Nearly 60 percent of extreme poor households rely on daily wage labor for sustenance; extreme poverty rate is nearly double that of the national average when the household head is employed as daily wage labor (Figure 3-5).

39. While the extreme poor in urban areas share many of the characteristics of the rural extreme poor, there are some specific features about their conditions. These are most commonly related to inadequate housing with high risk of eviction, poor living conditions, limited access to basic services in poor settlements, difficult employment conditions, particularly for women, and social problems in poor urban communities (see Box 3.7). Although the rural extreme poor are likely to face many of these problems in some form, crowding in urban areas and high living costs (including land prices) create conditions that are especially detrimental to the quality of life of the poor.

What led to the fall in extreme poverty rate between 2000 and 2005?

40. Between 2000 and 2005, extreme poverty rate declined for *all* land ownership, educational, and occupational groups (Figure 3-5 and Figure 3-6). This suggests a broad-based poverty

reduction process, with economic growth yielding benefits for even the most disadvantaged households. At the same time, the gains among the extreme poor were unevenly distributed across regions, consistent with the emerging East-West gap referred to repeatedly in this report.

Box 3.7: The extreme poor in urban areas

In-depth surveys focused on specific urban areas lend valuable insights into the characteristics of the urban poor. Two such recent studies are BRAC University's Institute of Educational Development (BU-IED) survey of low-income slum settlements in Narayanganj and Munshiganj and a Participatory Rapid Assessment (PRA) of extreme poor women in Narayanganj focusing on childcare and nutrition. Narayanganj, a relatively large industrialized municipality with over 250,000 residents, has a higher percentage of female-headed households than Munshiganj, a more rural town with 53,000 inhabitants (Census 2001), most likely due to the former's garment industry.

Housing and violence. Most likely due to its urban nature and rapid growth, Narayanganj faces poorer housing conditions, with 13 percent of households living in a poorly constructed hut or continuously facing eviction threat versus around 3 percent of households in Munshiganj. Poor communities tend to live on the most marginal, lowest and least habitable land, with extreme poor families living under plastic or recycled tin sheet roofs, usually in just one room. Domestic violence due to drug and alcohol abuse is a frequent occurrence, as is bullying and prejudice towards children of the extreme poor and harassment of girls.

Employment. Urban poverty is characterized by low pay and long hours. Across Narayanganj and Munshiganj, over 20 percent of women earn income for their families. Women face multiple challenges in balancing employment with childcare, with 28 percent and 18 percent of women in Narayanganj and Munshiganj, respectively, willing but unable to work due to lack of childcare.

Health and education. Both the BU-IED and PRA studies found that, long work hours among women can pose obstacles to child nutrition. For the extreme poor, moreover, nutrition is inadequate and women often absorb shortfalls in food consumption by eating less themselves. The BU-IED survey found that about 20 percent of poor, primary school-aged children were not attending school. Reasons for lack of attendance include abusive teacher behavior and prejudice against the poor, as well as high financial and transaction costs, harassment outside the home particularly for older girls, and the need for children to look after younger siblings and work for additional income.

Source: Bangladesh National Social Protection Project program document (World Bank, 2008 draft)

41. Much of the reduction in extreme poverty – particularly in rural areas – is attributable to income growth *within* the agricultural sector, consistent with what was found for overall poverty reduction (see also chapter 2). This is evident from the lower rates of extreme poverty associated with agricultural occupations in 2005 compared to 2000 (see Figure 3-5).

42. A shift from agriculture to non-agriculture also contributed to gains among the extreme poor as it has among the general population (see chapter 2). For the bottom three expenditure deciles (roughly corresponding to the extreme poor group of 2000), the proportion of household heads whose main occupation was agricultural day labor fell from 36 to 33 percent and that of farmers from 19 to 16 percent, while that of non-agricultural day labor, salaried workers, or non-agricultural self-employed increased.[11] This intersectoral shift would have increased welfare since average wage rates for non-agricultural day laborers was about 40 percent higher than those for agricultural day laborers (Serajuddin et al, 2007). Complementarities between agricultural and non-agricultural sectors may be playing a beneficial role. For example, Sen et al (2007) argues that the reduction in agriculture activity (especially self-employed agriculture) is to a

[11] The shift out of agriculture among the poorest is even more pronounced if we consider the main occupation in the household (as defined by the maximum number of hours worked in an occupation by any household member) instead of the main occupation of the household head.

certain extent attributable to the increased agricultural productivity that has freed up farm household labor for nonfarm activities.

IV. Explaining poverty changes between 2000 and 2005: results from a decomposition

43. The multivariate regression results from HIES datasets of 2000 and 2005 can help understand the processes underlying the reduction in poverty during this period. A useful framework for this exercise involves decomposing the growth in per capita real consumption (using the Oaxaca Blinder method) between 2000 and 2005 into growth due to changes in (i) household and location *endowments* and (ii) *returns* to these endowments. The decompositions suggest somewhat different stories for the rural and urban samples (see summary results in Annex 3, Table A-3.2).[12] Among rural households, increasing *returns* over time had as strong an impact on the observed consumption growth as did changes in household and location characteristics. Among urban households, changes in *characteristics* played a larger role than that in returns or coefficients on the aggregate.

Changes in endowments and returns to factors influencing poverty

44. Among household endowments or characteristics, changes in *household size* and *education* of household members contributed the most to consumption growth. This is consistent with the findings earlier in this report that reduction in household size and improvement in education of the labor force helped raise incomes and consumption. For example, chapter 1 finds that if household size had not changed between 2000 and 2005, poverty reduction would have been almost half of what it actually was. The effect of increase in education was particularly strong for urban households, indicating a higher skills premium in urban areas, as mentioned earlier.

45. With regard to *returns* to endowments, changes in returns to household size, other demographic variables, and geographic location contributed more to the consumption growth of rural than urban households; and changes in the returns to land ownership contributed to consumption growth among only rural households. On the whole, rural poverty reduction appears to be related to an across-the-board improvement in returns for most household and location endowments. This suggests an improving ability among rural households to utilize the resources available to them, which in turn suggests improvements in the economic environment and higher productivity during this period. The rise in returns was more muted for urban households, with improvements in endowments – including education and land ownership – playing a more important role.

46. For both rural and the urban households, the effects of changes in returns to occupations clearly dominate that of changes in occupational characteristics. For rural households, the increases in returns to agricultural labor and farming are substantial and explains why poverty has declined significantly among households headed by an agricultural day laborer or farmer (as seen in Figure 3-3). For urban households, returns to non-agricultural daily labor and self-employment improved significantly, and returns to non-farm enterprises improved to a lesser degree. The results from the decomposition are consistent with the findings of chapter 2 – that labor productivity growth, rising labor incomes and increased earnings from nonfarm self-employment in urban areas contributed to reducing poverty.

47. Among urban households, the coefficients on receiving remittances (domestic and foreign) increased sharply from 2000 to 2005, contributing significantly to urban consumption growth. While the coefficient on remittances and consumption does not necessarily measure the *impact* of

[12] For detailed results, including the decomposition results for all variables, see Kotikula et al (2007).

remittances on poverty (for reasons mentioned earlier), simulations using a computable general equilibrium (CGE) model for Bangladesh appears to confirm that foreign remittances played a key role in poverty reduction between 2000 and 2005.

48. The CGE results indicate that almost a quarter of the poverty decline is attributable to the combined effects of growth of foreign remittances and RMG exports, both of which exhibited strong growth (around 20 and 9 percent annually, respectively) during this period (Box 3.8). Between the two, remittance growth played a greater role in reducing poverty than RMG export growth. The positive impact of international remittances is not surprising, since in other countries remittances have been found to influence growth and poverty by raising consumption of households and generating large multiplier effects due to the fact that remittances are more likely to be spent on domestically produced goods.[13]

Box 3.8: Poverty impact of remittances and RMG industry: results from a CGE model

A computable general equilibrium (CGE) model numerically specified for the Bangladeshi economy for 2005 simulates how concurrent growth in remittances and RMG industry has affected economic growth and poverty. The inflow of remittances in Bangladesh increased from US$ 1.9 billion in 2000 to US$ 3.8 billion in 2005, while RMG exports grew from $4.8 billion to $ 6.9 billion. The model employs a Social Accounting Matrix (SAM) as a database for simulation, identifying economic relations through four types of accounts: (i) production activity and commodity accounts for 26 sectors; (ii) 9 factors of productions with 4 different types of labor and 5 types of capital; (iii) current account transactions between 4 main institutional agents: households and unincorporated capital, corporation, government, and the rest of the world; and (iv) two consolidated capital accounts to capture the flows of savings and investment by private and public institutions. Five simulations are considered: two to simulate an export decline shock for the RMG sector using different methods, one to simulate a remittance decline shock, and two more combining the RMG simulations with the 'Remittance' simulation to assess the combined effect of both.

The simulations suggest that almost a quarter of the poverty decline between 2000 and 2005 in Bangladesh can be attributed to the combined effects of growth of RMG exports and remittances. Thus, *ceteris paribus*, headcount poverty would have declined by 6.5 percentage points between 2000 and 2005 without such growth instead of the actual 9 percentage points. Without growth in remittances, poverty reduction would have been 7.4 percentage points, indicating that remittance growth played a greater role in reducing poverty than RMG export growth.

Source: Khondker and Raihan (2008)

Explaining consumption growth among the extreme poor

49. For households in extreme poverty (the bottom three deciles of each year), the effect of changes in returns were more important than changes in characteristics.[14] For rural households in the bottom three deciles, the contribution of changes in returns to consumption growth were roughly twice that of changes in endowments or characteristics. For urban households, changes in returns had a significant contribution in consumption growth only for the bottom 20 percent of households. More specifically, improving returns to agricultural labor in rural areas and to non-agricultural labor in urban areas contributed substantially to consumption growth. Increased returns in such occupations that employ a large proportion of the extreme poor suggest that the poor contributed, and benefited from, the economic growth process in Bangladesh.

Geographic or location effects – trends and contributions to consumption growth

50. Given the role played by location effects in explaining household consumption, time trends of these effects help understand whether and how the pattern of regional disparities has changed

[13] See Hanson and Woodruff (2003), Cox et al (2003), Ratha (2003) and Adams (2006).
[14] For detailed results, refer to Serajuddin et al (2007).

over the years. The 2005 results (Annex 3, Table A-3.1) are qualitatively similar to those from the earlier study (Ravallion and Wodon, 1999) using household data from late 1980s and early-1990s.[15] Comparisons between their results and those for 2005 suggest that on the aggregate, there has been some reduction in the "disadvantage" of being located in a district other than Dhaka.[16] This trend is seen more clearly for a shorter time period (2000-2005), during which the location effect on consumption has reduced for a majority of (old) districts. The decomposition results show that the *aggregate* negative effect of being located in any (old) district other than Dhaka has reduced from 2000 to 2005, which has contributed positively to poverty reduction (Annex 3, Table A-3.2).

51. A more disaggregated picture, however, reveals a more nuanced story, broadly consistent with the emerging East-West divide mentioned in chapter 1. The districts whose location disadvantages relative to Dhaka district increased or remained unchanged are mostly in the western/southwestern part of the country; whereas the location disadvantages of the eastern districts (including those neighboring Dhaka) relative to Dhaka seem to be narrowing. The changes in the location effect of the first group of districts contributed *negatively* to consumption growth, while that of the second group contributed *positively* to consumption growth (see Kotikula et al, 2007). As mentioned earlier, chapter 4 will analyze in greater detail how geographic location has affected consumption growth and what factors underlie these effects.

V. Conclusion

52. A sharp reduction in consumption poverty in Bangladesh during 2000-2005 was also mirrored by substantial improvements in living conditions – including housing characteristics, and access to sanitation facilities, electricity, and communications. Even highly disadvantaged households – in terms of land ownership, educational attainment and occupation – were able to improve their welfare, consistent with the large gains in consumption among the extreme poor (as seen in chapter 1). That said, reduction in consumption poverty, while occurring among the wealthy and poor alike in certain parts of the country, was not as equitably distributed among geographic regions.

53. The poor in Bangladesh are more likely to belong to households with a larger number of dependents, lower education, and with the household head engaged in daily wage labor. Poor households are also more likely to be landless or functionally landless and less likely to receive domestic or foreign remittances. There are differences between urban and rural households. Land ownership is relatively more important as a determinant of poverty and remittances less strongly correlated with welfare among rural households. Nonfarm self-employment (compared with other occupations) and ownership of a household enterprise have a positive impact on household's economic status in urban areas but not in rural areas. Remittances, particularly from international migrants, have a strong positive impact on a household's economic status.

54. The geographic location of a household has strong impact on its likelihood to be poor – a finding similar to what that in a previous study using data from more than 15 years back. Being located in a district outside Dhaka, with the exception of one or two districts, is found to be disadvantageous for a household, even after controlling for household level attributes.

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[15] This study used similar models as ours to explain variations in household expenditures (see Annex 3). The results were quite similar: in the rural sample for 1988, there was only one district (Chittagong) whose location effect was not significantly different from that of Dhaka; while in 2005 this is true for only Sylhet.

[16] There are difficulties in making exact comparisons between the results of Ravallion and Wodon (1999) and results for 2000 and 2005 – because of some differences in the specifications, which are in turn related to changes in the household survey over time (see Annex 3).

55. Decompositions measuring the relative impact of changes in returns to and levels of endowments provide clues on why poverty incidence fell during 2000-2005. Key factors contributing to poverty reduction were changes in some household characteristics (a smaller number of dependents and improvements in education) and an increase in returns to different occupations. Among the extreme poor, consumption growth is explained mainly by improving returns to their endowments and occupations, including daily wage labor. The returns to owning more agricultural land increased, particularly in rural areas. Over a longer time horizon of 15 years, an important development has been an increase in the returns to women's education, which is consistent with increasing participation of women in economic activities.

56. Thus, between 2000 and 2005, there were substantial improvements in key household attributes that influence the likelihood of poverty, with even the poorest of all households experiencing some of these gains. Equally important for poverty reduction was the increase in *returns* to household characteristics – suggesting that households were able to get more out of their existing endowments and occupations, perhaps because of better opportunities created by sustained economic growth during this period. These findings are consistent with chapter 2, which identifies rising productivity and earnings as important drivers of poverty reduction. Poverty reduction is also linked to labor outflow from agricultural daily wage work to the non-agricultural sector – particularly (as seen in chapter 2) to salaried employment in the services sector. In addition, the rapid growth of international remittances appears to have played a part in poverty reduction, although the distribution of remittances continues to be skewed between regions within the country.

57. What do these results imply for policies to sustain and improve the pace of poverty reduction? As mentioned in chapter 2, improving labor productivity in agriculture is critical to raise earnings of agricultural wage workers. Given the population pressure on land, increasing access to land and achieving higher agricultural labor productivity would require accelerated growth in the non-agricultural sectors to absorb workers from low return agricultural wage employment. Increasing productivity would also require better water management, improved seed availability, timely access to fertilizer, and investments in research and extension services. The relatively high returns to non-agricultural self employment underscore the importance of this sector for poverty reduction. The rise in returns from and growth of household-based nonfarm enterprises may be linked to the rapid spread of microfinance. Further improving the access to finance for small enterprises, particularly in urban areas where microfinance is less prevalent, is likely to spur their growth.

58. Increasing education attainments will clearly have high dividends in terms of higher earnings and reduced poverty. As women's participation in the labor force increases, there are increasing economic benefits of women's education to the household – to complement the social and intra-household benefits associated with women's education. As education levels increase, the poor are also increasingly able to migrate out of agriculture daily wage labor into (predominantly) salaried employment in services. A fall in dependency ratios within households played a key role in reducing poverty between 2000 and 2005, indicating that sustaining Bangladesh's past successes in reducing fertility is crucial for poverty reduction.

59. Given the important role played by remittances in reducing poverty, especially from household members who have migrated to foreign countries, addressing the constraint faced by the poor to migration can be an area for policy intervention. This chapter mentioned a recent innovation by the government to facilitate organized contract migration from the very poor *Monga*-prone greater Rangpur districts. Learning from this experiment, other such interventions can be introduced – to improve household welfare by facilitating international and domestic

migration from areas where economic opportunities are extremely limited. Improving the human capital of the poor, through better quality education and improved vocational training and health services, will also contribute towards raising the returns to and the poverty impact of migration.

60. As Bangladesh urbanizes rapidly, improving the conditions of the urban poor in terms of better sources of income, quality of life, and human development is likely to become more of a challenge. The incidence of extreme poverty in urban areas has been reducing as rapidly as it has for the country as a whole. Gains in consumption/income, however, would not be enough to significantly improve the conditions of low-income households, given high living costs in urban areas, housing shortages, lack of basic services in low-income settlements, and crime and violence. Poverty reduction efforts must therefore focus on expanding access to housing, basic amenities, security, and health and education services to the urban poor. Safety net programs designed to protect the poorest against loss of income are necessary, given that these are almost non-existent in urban areas. Conditional cash transfer programs could enhance human development outcomes and provide a source of regular income for the urban poor. Better availability of childcare would help women cope better with the competing needs at employment and home and increase their participation in the labor force.

61. For the country as a whole, between 2000 and 2005 there has been an encouraging trend of reduction in the economic gap between the greater Dhaka region (old district) and areas outside this region. A closer examination, however, reveals that such convergence has occurred largely among the eastern districts and not in most areas in the west and southwest of the country, which has resulted in the East-West gap referred to earlier in this report. As chapter 4 will show, significant consumption gains among the poor were largely limited to the eastern part of the country that has better access to major urban growth centers of the country. Chapter 4 will also address the critical question of what types of spatial characteristics explain this dichotomy between different parts of the country.

4. Lagging Regions in Bangladesh: Is there an East-West Economic Divide?

1. As earlier chapters have reported, significant disparities exist in poverty incidence and its reduction (over the period 2000-2005) between different regions of Bangladesh, resulting in what can be roughly described as an "east-west divide." Chapter 3 has shown that geographic location of a household has a strong influence on its economic condition – to the extent that in 2005, location in any district outside Dhaka is associated with lower household consumption levels, even after accounting for the effect of a range of household level attributes that typically influence household welfare. Given these results, a substantive analysis of poverty in Bangladesh would require examining the interactions between geographic or spatial characteristics and household economic status in greater detail.

2. Regional disparities can also arise in non-income dimensions of welfare, most notably in human development that is a key determinant of welfare and the future economic prospects of a country and regions within. A subsequent chapter (chapter 5) will analyze the changes, inequalities and determinants of human development and their implications for future generations. It will in fact turn out that the regional gaps in income and consumption in Bangladesh are often at odds with achievements in education and health, suggesting that the processes underlying human development are at least in part different from those that explain economic gaps between regions. The focus of *this* chapter, however, will be on economic inequality between regions, as captured by differences in household consumption, growth and poverty, and the terms "lagging" or "less-integrated" regions will refer to these differences.

3. Following up from chapter 3, this chapter has a few interrelated objectives. The first is to examine trends in regional disparities from 2000 to 2005 – the main time period of focus for this report – in greater detail and level of disaggregation than what has been done so far. The second objective is to "unpack" the so-called location effects mentioned in chapter 3, to understand better why certain parts of the country are more likely to be better-off and experience greater reduction in poverty than others. This is not an easy question to address, given the range of social, political and economic factors – including historical events and trends – that may influence current inequality patterns. Recognizing that a complete accounting of the forces that shape regional differences is beyond the scope of this report, the focus will instead be on a narrower question: what are the specific factors potentially influencing local economies – such as infrastructure, connectivity to markets and microfinance coverage – that explain (at least in part) the "unobserved" effects of location on household welfare?

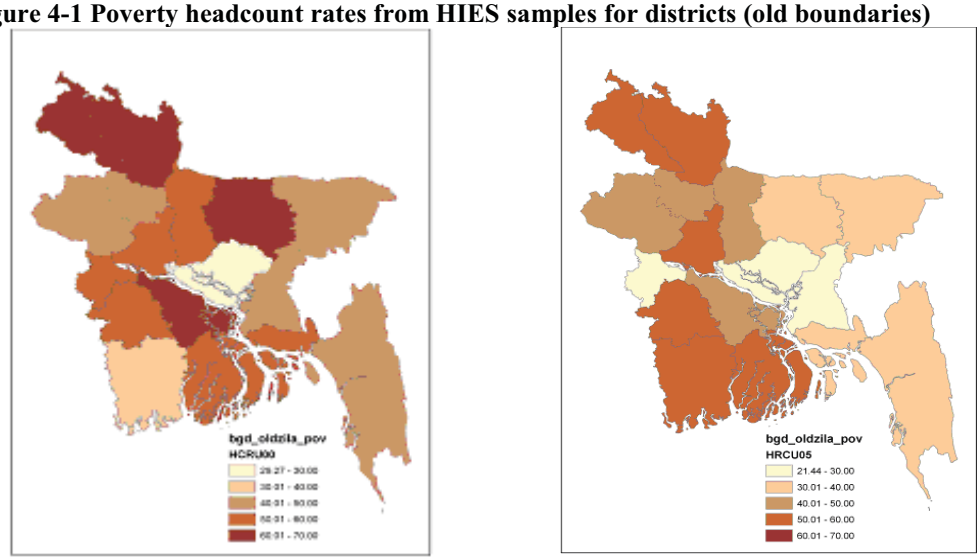
4. The third objective will be to look deeper into the emerging spatial trend in Bangladesh through the lens of access to major economic centers. The key question would be: to what extent is the so-called "east-west divide" related to access to the country's major urban centers, the capital city of Dhaka and the port city of Chittagong. The "growth pole" effect on regional development cannot be measured directly with available information. However, looking at how economic activities are concentrated, how these patterns have evolved over time and how they may be related to the spatial factors mentioned above can help identify the constraints faced by the economically lagging regions of the country. Informed by the analysis, the chapter will conclude with a discussion on policy options to engender growth and poverty reduction in lagging regions, with reference to a few international experiences that are likely to be relevant.

I. Regional disparities below the division level: trends and patterns

5. The disaggregation of poverty incidence by divisions in chapter 1 indicated that on average the gaps between regions have expanded from 2000 to 2005 and contribute more to aggregate

inequality in 2005 than in 2000. However, a division is too large and heterogeneous an area to be useful as a unit for discerning trends in regional differences. More refinement would require disaggregating poverty incidence at the level of the old districts or *zillas* (17 for the country).[1] Since the survey is *not* designed to be representative at the (old) district level, these results should be seen as applying to the HIES *sample* for each district, rather than its population. At the same time, the sample sizes are large enough for most of the old districts to provide an indicative picture of how regional trends in poverty have evolved during 2000-2005.[2]

Figure 4-1 Poverty headcount rates from HIES samples for districts (old boundaries)



2000 **2005**

Note: Since HIES is not representative of the population at district level, the maps represent the poverty rate for the HIES *sample* from each district. Darker colors indicate higher poverty headcount rate.
Source: HIES 2000 and 2005

Diverging trends between the eastern and western districts

6. Figure 4-1 compares the regional disparities in poverty for 2000 and 2005, by grouping each district on the basis of its poverty rate (as measured by the HIES sample for that district). Between 2000 and 2005, the average gap in poverty incidence between Dhaka and the rest of the country has narrowed to some degree – a larger number of districts have poverty rates close to that for Dhaka in 2005 than in 2000.[3] Moreover, there are no districts in 2005 with the extremely high poverty rates that are observed for four districts in 2000.

7. But along with overall narrowing of the gap with Dhaka, a divergence between the east and the west (with a few exceptions[4]) has emerged and are brought into clearer focus when districts are grouped by poverty rates. As before, "east" is defined as the divisions of Dhaka, Chittagong, and Sylhet and "west" as the divisions of Khulna, Rajshahi, and Barisal. All the eastern districts had significant reductions in poverty; but the highest reductions occurred in some of the poorest districts in 2000 (Mymensingh and Noakhali), which suggests a trend of convergence among the eastern districts (see Annex 4, Table A-4.1). The pattern of reduction also suggests increasing spillover effects from Dhaka district – that has historically had the lowest poverty incidence – on

[1] See Annex 4, Figures A-4.1 to see how the old district boundaries map to the divisions; and Figure A-4.2 and Table A-4.1 for how the old districts are sub-divided into the new districts.
[2] In contrast to the old districts, the current/new districts are too numerous (64) for the HIES sample of each district to be sufficient for even rough analysis.
[3] In 2000, poverty rate of the HIES sample from Dhaka district was below 30 percent –lowest in the country.
[4] A notable exception is the district of Kushtia in the west, which had one of the largest poverty reductions.

surrounding areas: four out of the five districts bordering Dhaka district experienced poverty reduction well above the national average.[5]

8. In contrast, most districts in the west have seen much less reduction in poverty, and there is no pattern of convergence. While some poverty reduction occurred in Dinajpur and Rangpur in the northwest, which were among the poorest districts in 2000, large areas in the southwest (in Khulna and Barisal divisions) have actually grown poorer, and other areas have stagnated.

Comparing "location effects" on consumption between 2000 and 2005

9. The two major trends described here – reduction in the average gap between Dhaka district and the rest of the country and the different paths taken by eastern and western parts of the country – can be identified more formally, separately for rural and urban areas, from the poverty determinant analysis conducted for chapter 3.

10. In the regressions to measure how household and location characteristics influence household (per capita) consumption levels, most location effects are significant in both years for rural and urban households. Households located in districts other than Dhaka district are likely to have lower per capita consumption (relative to being in Dhaka district), *net* of the effect of household attributes (see Annex 4, Table A-4.2). Changes in location effects between 2000 and 2005 suggest some degree of convergence in the location effect on consumption in a majority of districts, as mentioned in chapter 3 (see Annex 4, Table A-4.2). However, the pattern of changes is consistent with the trend of east-west divergence discussed earlier (see Box 4.1).

Box 4.1: Trends in regional disparities – what do location effects on household consumption suggest?

To see if district-level location effects on household consumption have changed significantly from 2000 to 2005, Chow tests are conducted on the poverty determinant regressions of chapter 3. Table A-4.2 (Annex 4) reproduces the coefficients of district dummies from rural and urban regressions for 2000 and 2005, and includes the coefficient for each district in the "Chow Test" indicating the reduction in size of the (negative) location effect for the respective district from 2000 to 2005.

The results show some degree of convergence among districts in both rural and urban samples towards the location effect of Dhaka district in the aggregate. In the rural sample, the location disadvantage relative to Dhaka district declined significantly for eight out of sixteen districts, remained statistically unchanged for four and increased for four others. In the urban sample, the disadvantage reduced for ten districts and increased for the rest. These results are consistent with the decomposition results in section IV, chapter 3 – that a reduction in the size of the average (negative) location effect of being located in a district other than Dhaka contributed to poverty reduction.

But the *pattern* of changes in location effects, taking the districts one by one, reveals the east-west divergence trend – defining "east" as Dhaka, Chittagong, and Sylhet divisions and "west" as Khulna, Rajshahi, and Barisal divisions (as in chapter 1). For the rural sample, six out of the eight districts whose location disadvantages relative to Dhaka district have increased (Khulna, Barisal, Rajshahi, and Bogra) or remained unchanged (Pabna and Jessore) are in the west. Only three of the nine western districts (Kushtia, Rangpur, and Dinajpur) have seen a decline in the size of their location effect, compared to five out of the seven eastern districts (for Chittagong and Noakhali, the location effects are statistically unchanged). For the urban sample, five of the six districts whose location disadvantages relative to Dhaka have increased are in west or southwest (Jamalpur, Khulna, Barisal, Pabna, and Bogra); while Comilla is the only district in the east whose location disadvantage has increased.

Source: Kotikula, Narayan, and Zaman (2007)

[5] The four districts bordering Dhaka district with large reductions in poverty are Mymensingh, Faridpur and Jamalpur (Dhaka division), and Comilla (Chittagong division). Pabna (Rajshahi division), bordering Dhaka to the west, is the only exception, where poverty stagnated.

II. Explaining "location effects" with the characteristics of locations

11. An important question is to what extent the location effects shown above are explained by location-specific attributes, such as availability of infrastructure, basic facilities and connectivity/access to urban markets.[6] The multivariate regression analysis of poverty determinants for 2005 is a useful framework to examine this question. Variables that can serve as indicators of connectivity to markets (for rural communities), electricity coverage, the size of the nonfarm sector, and incidence of and increase in coverage of microfinance (all at the *thana* level) are introduced in the regressions used in chapter 3.[7] The results should be seen as identifying location-specific correlates rather than determinants of household consumption – since there is no way to differentiate between whether certain characteristics of an area are *causes* of economic progress or developed as a *result* of economic progress in these areas (see Annex 4 for description of variables and caveats).[8]

12. Most of the community or *thana* level location variables are significant correlates of household consumption for rural areas, but less so for urban areas. Travel times to different markets and expansion in microfinance membership are significant correlates of consumption for rural households. Adding these variables, along with indicators for electricity coverage and the importance of the nonfarm sector, also reduce the size of (but do not completely eliminate) the location effects measured by district dummies – suggesting that the location characteristics partially account for the disadvantage of a household being located outside Dhaka district (see Annex 4).

Access to markets and infrastructure

13. Table 4-1 shows the coefficients of location variables when they are added one at a time to the basic model specification – to avoid possible "biases" in the coefficients due to multicollinearity when all variables are introduced together.

14. *Travel time to urban centers* – a reasonable proxy for access to markets – is an important correlate of poverty in rural Bangladesh. Per capita expenditure is significantly higher for a rural household when it is located in a community better connected to markets, after controlling for household characteristics and the (unobserved) effects of being located in a particular district (Table 4-1). While more analysis is necessary, the findings suggest that there are economic benefits for households in areas with better access to the local market and the largest urban center of the country.

Table 4-1: Coefficients of location variables in regression (2005)

	Rural	Urban
Travel time to thana HQ ('00 mins)	-0.065	
	(4.02)**	
Travel time to district HQ ('00 mins)	-0.008	
	(3.22)**	
Travel time to Dhaka ('00 mins)	-0.042	
	(4.44)**	
% of households with electricity in Thana	0.004	0.001
	(3.86)**	(2.14)*
% of households owning agricultural land in Thana	-0.004	-0.001
	(1.99)	(0.54)

Note: 1) Coefficients when each variable is added singly to the basic regression models in columns (1) and (3) of Table A-3.1 (Annex 3);
2) **: significant at 1% level; *: significant at 5% level.
Source: Census (2001) for all variables listed here; HIES 2005 for other variables in the regressions.

[6] Location/geographic factors, like infrastructure availability and access to markets turn out to be highly important in some other countries –Sri Lanka being one example –in explaining spatial differences in economic growth and poverty (for the Sri Lanka case, see World Bank, 2007b).
[7] The *basic* regression specifications are in columns (1) and (3) of Table A-3.1, Annex 3. The results of the "extended" regressions, with the location characteristics, are in columns (2) and (4) of the same table.
[8] This type of "placement bias" can occur, for instance, if an economically powerful area receives more public goods due to greater political power or on account of its economic/strategic importance for the central government.

15. *Electrification* also appears to be associated with lower poverty, particularly in rural areas. The coefficient on the percentage of households in a *thana* with electricity connections is positive and significant for both rural and urban regression, when introduced singly (without other location characteristics) into the regressions. The effect is larger for rural households than urban households, primarily because connectivity to electricity is much more uneven in rural areas. The association between household consumption and proportion households in the *thana* owning agricultural land – a proxy for the *size of the non-farm sector* – is quite weak, regardless of whether the variable is introduced singly or with other location characteristics in the regressions.

The geographic coverage of microfinance

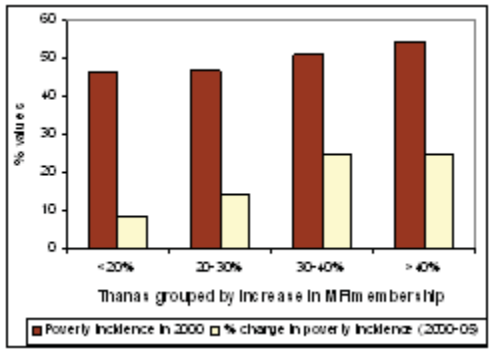
16. In the multivariate regressions, the *increase* in *thana*-level microfinance coverage during 2003-2005 is positively associated with increases in consumption (see Box 4.2).[9] An important caveat to these results is that they represent correlations between household consumption and microfinance coverage in an area, and not between a *household's* participation in microfinance and its consumption. The *thana* level variables – the only recourse in the absence of household level data on microfinance in HIES – may be capturing this household effect indirectly, in addition to other benefits and externalities that could arise from microfinance expansion in an area.

Box 4.2: Spatial association between microfinance expansion and poverty reduction

A majority of microfinance clients are served by three major providers: BRAC, ASA, and Grameen Bank, whose combined market share has declined slightly between 2003 and 2005, from 64 to 61 percent (see Annex 4, Table A-4.3). The number of microfinance member households increased substantially from 2003 to 2005.

Has microfinance expansion contributed to poverty reduction? The regression results quoted earlier hint at such a link, which is supported by cross-tabulations. Households in *thanas* with higher growth in microfinance coverage experienced a higher rate of poverty reduction – consistent with the regression results for rural households (yellow bars in the graph). Microfinance membership also seemed to have expanded faster in areas that were on average poorer in 2000 (see graph). The two results together suggest that, on average, microfinance expansion occurred in areas that were initially poorer and subsequently experienced higher than average reduction in poverty.

Increase in microfinance membership and poverty reduction



Note: Increase in membership refers to % change in members in a *thana* between 2000 and 2005. The membership figures of 2000 are obtained by projecting back from the annual rate of growth during 2003-05.
Source: PKSF data (2003, 2005); HIES (2000, 2005)

Source: Kotikula, Narayan, and Zaman (2007)

17. To put these results in context, microfinance access has increased rapidly in recent years (see Zaman 2006 for more details). *Thana*-level cross-tabulations suggest that microfinance expansion has occurred in areas that were (a) poorer on the average in the year 2000, and (b) have subsequently experienced higher than average reduction in poverty – consistent with the regression coefficients quoted above (see Box 4.2). Maps of microfinance membership at the (old) district level show that coverage was higher among the poorer areas in the west in 2003,

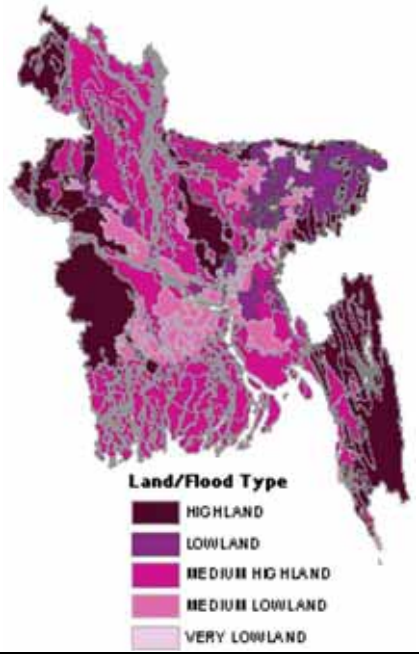
[9] The negative correlation between microfinance coverage in a *thana* and consumption is even harder to interpret. Higher microfinance coverage is higher in areas with greater poverty would be consistent with a conscious effort by MFIs in the recent past to expand coverage in poorer areas or an adverse impact of microfinance on poverty (unlikely based on evidence from numerous other studies).

while larger increases in microfinance membership more in the east than in the west (see Annex 4, Figures A-4.3 and 4.4).

Area-specific risk of natural disasters

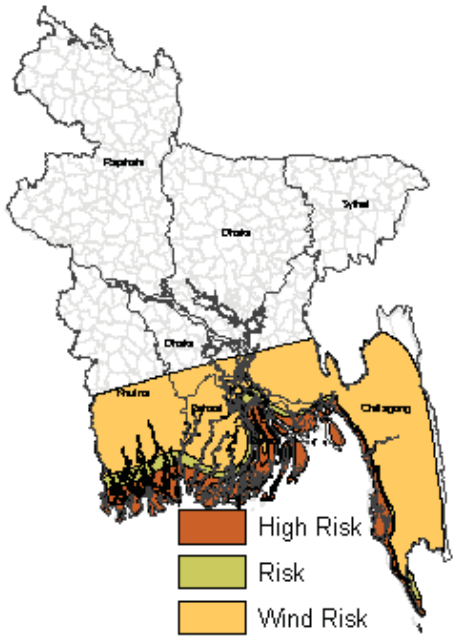
18. Large parts of Bangladesh are vulnerable to natural disasters including floods, droughts, and cyclones, which are mainly to do with the topography and location of areas (see chapter 6). Given that, does the risk of natural disasters explain some of the so-called location effects on household welfare? The risk of floods, primarily associated with the elevation of an area, is spread among locations throughout the country (Figure 4-2), whereas areas with high risk of cyclones are concentrated in the south, primarily in the (old) districts of Khulna, Barisal, Noakhali, and Chittagong (Figure 4-3).

Figure 4-2: Land type (by level of inundation) by thanas



Source: Government of Bangladesh
Note: High land (no flood), Medium Highland (0-90cm flood), Medium Lowland (90-180 cm flood), Lowland (> 180 cm flood), and Bottomland (permanently wet).

Figure 4-3: Cyclone risk by thanas



Source: World Food Program
Note: The risk of cyclone takes into account storm surge and wind damage.

19. While none of the disaster risk variables have any impact on household welfare in urban areas, higher risk of cyclone in an area is associated with greater poverty among rural households. Moreover, introducing a dummy variable for *thanas* with high risk of cyclone into the basic rural regression specification significantly reduces the size of the location effects on household consumption for the four most cyclone-prone districts. Thus the risk of cyclones appears to partly account for the location disadvantages of these districts, relative to Dhaka district. There is no linear relationship between flood risk and poverty, partly because lowlands more susceptible to floods also benefit from the beneficial impact of floods on soil fertility. The only clear result seems to be that very low or "permanently wet" lands and highlands tend to be worse off than areas with intermediate elevation.

20. The correlation between higher risk of cyclone and rural poverty should not be interpreted as the *impact* of cyclones on poverty, since the coefficient may reflect the effect of other unobserved

factors that happen to be highly correlated with cyclone risk. For example, the effect of cyclone risk on consumption disappears when introduced into the regressions *with* the infrastructure-related variables mentioned earlier (travel time to markets and electricity availability), because these variables turn out to be highly correlated with cyclone risk. In other words this suggests that high cyclone risk areas are more likely to be poorly connected to markets and electricity.[10] Thus while the impact of cyclone risk on rural poverty is hard to quantify, the fact that high risk areas are more likely to be poor and deficient in infrastructure and market connectivity is revealing, since better infrastructure would likely mitigate the economic impact if and when a disaster were to occur.

Seasonal deprivation in the northwest

21. Another important area-specific phenomenon to take into account is that of *Monga*, which affects large areas in the northwest part of the country, primarily in the greater Rangpur area. *Monga* refers to a form of severe deprivation during the lean agricultural season of mid-September to November, corresponding to the post-planting and pre-harvesting of the major Amon rice crop, which also induces high chronic poverty. Roughly 7 percent of the total population in Bangladesh inhabits the *Monga*-affected districts (for more information, see chapter 6). The consequences of *Monga* likely explain why location in Rangpur (old) district had strong negative impact on household consumption in the poverty determinant regressions – the largest among all districts in 2000 and the second-largest in 2005 (see Annex 4, Table A-4.2).

22. **In concluding this section**, it is useful to summarize the main findings. Location characteristics partially account for the district level location effects in multivariate regressions – in other words, they help explain why location in a certain district influences a household's economic status, net of the effects of household attributes. These include characteristics specific to the rural community (like connectivity to the nearest market or large urban centers) and attributes of a larger area (incidence of electric connections or microfinance membership in a *thana*).

23. Travel times to markets – especially the nearest market and Dhaka city – turn out to be important determinants of the economic status of rural households, and electricity coverage in an area also seems to matter. Infrastructure and related constraints that characterize poor areas are strongly correlated to each other as well, which is to say they often occur simultaneously in the same areas. There is some association between the expansion of microfinance membership and reduction in poverty in rural areas. On the whole, the location factors considered here are more influential for the welfare of rural households than for urban households. This is partly because travel times are available for rural areas only and would arguably also be less relevant for urban areas. Rural areas with a higher risk of cyclones are more likely to be poor and have lower access to markets and infrastructure – which suggests high vulnerability of these areas, as well as the possibility that the risk of large natural disasters, even if such events are infrequent, has an adverse impact on the regional economy. Other than these characteristics, the geographic pattern of severe seasonal deprivation (*Monga*) contributes to chronic poverty in large parts of the northwest.

[10] The correlation coefficients of high cyclone risk in a *thana* with (i) travel time from a community to Dhaka is 0.46, and (ii) percentage of households in the *thana* with electricity connection is -0.20.

III. Regional inequality – the effect of "growth poles"[11]

24. The discussion in this chapter indicates substantial differences in living standards across locations – across administrative divisions and at the district level – with a notable "east-west divide." Factors like remoteness from markets and towns and lack of infrastructure (like electricity) are found to be important characteristics of poor areas *and* are strongly correlated to each other. This in turn seems to suggest that certain areas in Bangladesh have a combination of factors likely to lead to concentration of economic activities, giving rise to so-called "growth poles." Therefore, an intuitive approach to analyze the importance of location – particularly for informing policy discussions – is to examine whether access and connectivity to such growth poles are important in explaining regional differences in living standards.

The "growth poles" of Bangladesh

25. There is strong evidence to suggest that two metropolitan cities have emerged as the main centers of economic activity of the country: Dhaka, the capital city with a population of around 12 million and to a lesser extent, Chittagong, the main port city with a population of 3.4 million. These two cities account for 88 percent of the nation's metropolitan area population and 41 percent of the total urban population. Estimates based on HIES 2000 and 2005 indicate that the average real per capita expenditures in these two cities is about 40 percent higher than in other metropolitan areas. The dominant seats of major administrative and economic functions, Dhaka and Chittagong act as the main domestic and international trading hubs, attracting large numbers of migrants from other parts of the country, as well. There is also evidence that spatial concentration in Dhaka city and its surrounding areas has *increased* in recent years.

Spatial concentration of economic activities

26. A substantial part of the economic activities in Bangladesh is clustered around Dhaka and to a lesser extent, Chittagong (Figure 4-4). Urban areas account for 72 percent of the employment in firms with 10 or more Total Persons Employed (TPE) – a reasonable measure of formal sector employment. As Figure 4-4 shows, a large majority of these are in Dhaka and Chittagong cities and their surrounding areas.[12] Dhaka has seen an eightfold increase in its population since 1970, accounting for a third of the country's urban population with its 12 million residents, and is the fastest growing mega-city of the world (UN estimates). Its "urban primacy" (share of total urban population) exceeds that of most global comparators (World Bank, 2007a).[13]

27. The concentration of economic activity around Dhaka and Chittagong is also seen from the spatial distribution of employment by industry. Employment in the largest category of industry – "agro processing industry" (including Ready Made Garments) – is concentrated in Dhaka and to a lesser extent in Chittagong (Annex 4, Figure A-4.5). The same spatial pattern is seen for employment in manufacturing firms with TPE of 10 of more. Dhaka alone accounts for 80 percent of the country's Ready Made Garments (RMG) output and half of manufacturing sector employment. Complementary business services, particularly finance and real estate account for a much higher share of total employment in Dhaka relative to the rest of the country (World Bank, 2007a). Most of the medium and small towns/cities do not have significant employment in formal sector manufacturing (Annex 4, Figure A-4.6).

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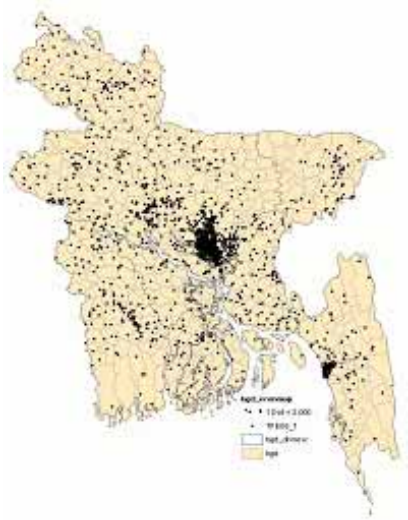
[11] This section draws substantially from Shilpi (2008). Maps and figures on spatial concentration are from Bangladesh Urban Strategy Notes (World Bank, 2008c draft).

[12] Dhaka SMA accounts for about 80 percent of total formal sector employment and number of establishments in all SMAs in Bangladesh.

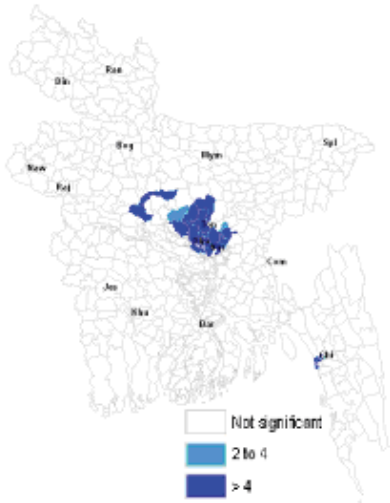
[13] For instance, the urban primacy of the largest cities of India, Pakistan and Korea are 6, 22 and 23 percent respectively. In Sri Lanka, the greater Colombo area has an urban primacy similar to Dhaka's (World Bank, 2007b).

Figure 4-4: Employment in formal sector firms (2006)



Note: Employment in all firms with 10+ Total Persons Employed (TPE). 1 dot represents 2000 workers. Dots are randomly placed within each Upazila
Source: Economic Census (2006)

Figure 4-5: Clustering of manufacturing firms (2006)



Note: Blue indicates positive value of Local Moran z-score (clustering), with darker blue indicating higher clustering.

28. The clustering of manufacturing employment (in firms with TPE of 10 or more) is seen more formally by mapping Local Moran statistics for *upazilas* – a measure of correlation between manufacturing employments in neighboring *upazilas*.[14] Looking across the country, clustering is seen *only* around Dhaka and to a much smaller extent, around Chittagong – indicating that agglomeration takes place predominantly in Dhaka and its surrounding areas (Figure 4-5).[15]

Access to growth poles and household welfare

29. Given the clear pre-eminence of these two urban centers as growth hubs, a key question would be whether access to these urban centers is associated with higher incomes and lower poverty. The major rivers Ganges and Brahmaputra slice Bangladesh into three parts (Figure 4-6). The natural borders defined by these two rivers appear to be an intuitive way of grouping regions in terms of their access to Dhaka and Chittagong. Territories lying to the east of the Ganges and Brahmaputra are defined as the integrated region (IR) – covering the divisions of Chittagong, Sylhet, and most of Dhaka (except for the greater Faridpur districts). Areas to the west of Brahmaputra (Rajshahi Division) and south of Ganges (Barisal and Khulna divisions, and the greater Faridpur districts in Dhaka division) that are separated from Dhaka and Chittagong by one of the two rivers, are defined as the less integrated region (LIR).

Figure 4-6: The rivers in Bangladesh

[14] Positive value of the L-M statistic indicates that employment in manufacturing in an *upazila* is associated with higher manufacturing employment in neighboring upazilas.
[15] The green areas, indicating negative values of the Local Moran statistic, are likely to be the "boundaries" of the clusters of manufacturing employment.

30. The IR-LIR distinction almost coincides with the so-called East-West divide – with the only exception of greater Faridpur district, which is considered a part of West but is in LIR. Using the rivers to differentiate between regions has the advantage that the presence of a large river is an "exogenous" factor, and one that is also strongly correlated with travel time to Dhaka, which was identified in section II as a key factor in explaining regional differences in poverty.

31. The incidence of poverty differs substantially between IR and LIR. According to HIES 2005, the poverty rate in IR was 33 percent compared to 50 percent in LIR. The gap was smaller in 2000, when the poverty headcount rate was 46 percent in IR and 53 percent in LIR. At the mean of the expenditure distribution, the gap between IR and LIR was 9 percent in 2000 and 17 percent in 2005; and the urban-rural gap was 27 percent in 2000 and 19 percent in 2005. Thus between 2000 and 2005, while the rural-urban gap has declined across Bangladesh suggesting greater integration in the economy, the IR-LIR gap has increased.

Figure 4-7: IR-LIR gaps in log real per capita expenditures (2000 and 2005)

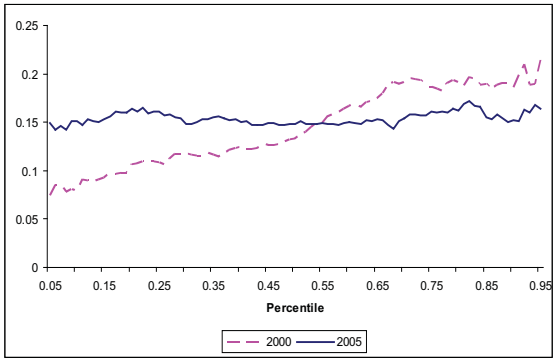
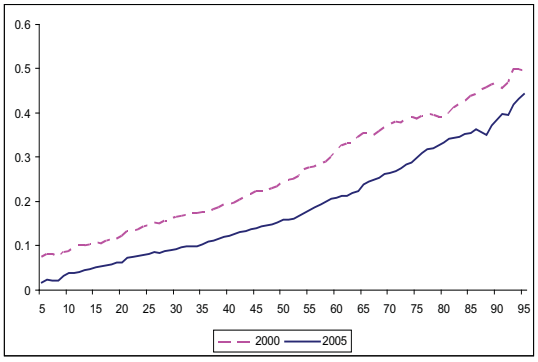


Figure 4-8: Urban-Rural gaps in log real per capita expenditures (2000 and 2005)



Source: Shilpi (2008) using HIES (2000 and 2005)

32. **IR-LIR gap in per capita expenditures.** Figure 4-7 displays the IR-LIR gap in real per capita expenditure by all per capita expenditure quantiles (from 5th to 95th), which is positive for all quantiles for both years. In 2000, the IR-LIR gap was increasing in expenditures quantiles (e.g. about 11 percent at 20th percentile and 19 percent at 80th percentile). In 2005, however, the gaps are similar for the rich and the poor (e.g. around 16 percent at 20th and 80th percentiles). Compared with 2000, the IR-LIR gap in 2005 increased for all quantiles below the 55th percentile and decreased for all quantiles above the 55th percentile. Thus *the poor households in IR experienced a much faster rate of consumption growth compared with their counterparts in the LIR*. The increasing IR-LIR gap among poor households stands in sharp contrast with the *decline in the urban-rural gap* among all households between 2000 and 2005 (Figure 4-8).

33. **Endowments versus returns in explaining IR-LIR gaps.** To analyze what factors explain the IR-LIR differences, the IR-LIR gaps in the distribution of per capita expenditures are decomposed into gaps owing to (i) differences in household and location endowments, and (ii) differences in *returns* to these endowments, using a quantile decomposition technique on HIES data from 2000 and 2005.[16] Economic literature suggests that while regional differences in *endowments* may indicate "sorting" of households by observable attributes among locations or regions, differences in *returns* can occur when there are costs of migration between regions and/or unobserved heterogeneity across households and locations. The latter can be attributed to sorting of households by *unobserved* characteristics among locations, agglomeration economies

[16] This technique was pioneered by Machado and Mata (2005). Nguyen et al (2007) applied this technique to separate out the contribution of endowments/covariates and returns to urban-rural inequality in Vietnam.

in densely populated urban centers, or the externalities created by public services and infrastructure in a region.[17]

34. Because the above effects may affect households differently depending on their economic status, returns to observed household attributes are likely to vary across households depending on their position in the welfare distribution. Ravallion and Wodon (1999) showed that both sorting and return effects are important in explaining average regional gaps in welfare in Bangladesh during the early 1990s. The analysis here focuses on a more recent period; and the quantile regression approach allows the returns to household attributes to vary with a household's position in the expenditure distribution (see Annex 4, section II for a discussion of the motivation for the empirical exercise).

35. From 2000 to 2005, the endowment effect shifted upward for all quantiles (see Box 4.3), which suggests that *physical and human endowments improved more in IR than LIR for almost all households*. Due to this improvement, in 2005 the entire distribution of households in IR have better attributes than those in the LIR, with the exception of the bottom decile. This is consistent with an earlier finding that the average years of education among the working age population increased faster in the East than in the West between 2000 and 2005 (chapter 2). At the same time, chapter 5 finds that educational attainment indicators in the western divisions are on par with, and in many cases surpassed, those in the east in 2005. This suggests that the IR-LIR gaps in endowments are more significant for household characteristics such as physical assets, demographics, and occupational characteristics than they are for education.

36. The return effects show that the poorest 40 percent of households in LIR get much smaller returns to their attributes compared with the same group in IR region, and this gap has increased from 2000 to 2005. This is in turn consistent with the patterns of growth in wage and labor income shown in chapter 2 – robust in the East but stagnant in the West. While the return effects for upper quantiles have declined from 2000 to 2005, they are still substantial, accounting for at least half of the total IR-LIR gap in log per capita expenditures. The direction of the endowment and returns effects indirectly suggest some degree of sorting by observable attributes of households, which is to say *selective migration of households and individuals with better attributes from LIR to IR* (see Box 4.3).

Box 4.3: Decomposing IR-LIR gaps in per capita expenditures of households

The IR-LIR gaps in 2000 and 2005 in the distribution of (log of) per capita expenditures are decomposed into gaps owing to differences in (i) household and location endowments (Figure A), and (ii) returns to these endowments (Figure B), using quantile decompositions on HIES data. In 2000, the bottom 15 percent households in the LIR region had better attributes compared to their counterparts in the IR region, while the reverse is true for households belonging to 45th-75th quantiles. For the remaining quantiles, there were no substantial differences in observed household attributes across IR and LIR regions. In 2005, the endowment effect shifted upward for all quantiles, with the result that households in the IR region have better attributes than those in the LIR for the entire distribution except for the bottom 10 percent (Figure A). Two intuitive explanations for this are: (a) sorting by observed attributes, i.e. migration of households/individuals with superior endowments from LIR to IR, and/or (b) faster growth particularly in physical capital among households in IR due to better access to large urban centers (see Annex 4, section II). Sorting by observed attributes is likely to moderate the differences in returns to those attributes between the regions; faster growth, on the other hand, would shift the return effects upward as well.

[17] See for example, Roy (1951) for location sorting; Fujita et al (1999) for agglomeration economies; Ravallion and Jalan (1999) for the externalities of public infrastructure in a region; and Kanbur and Rapoport (2005) for the costs of migration and how proximity can influence migration flows. For more references see Annex 4, section II.

The difference in returns to observed household attributes has declined from 2000 to 2005 for all quantiles above the 41st percentile (Figure B), which is consistent with the effect of selective migration of households with better attributes from LIR to IR. But the return effects are still substantial for all quantiles. For quantiles above the median, the return effects account for about half of the total IR-LIR gap in log per capita expenditures and for quantiles below the median, return effects explain even more. For the bottom 40 percent households, the returns effect in 2005 is larger than in 2000.

Source: Shilpi (2008)

Figure A: Endowment effects for IR-LIR Gap (2000 and 2005) and 95% Confidence Intervals

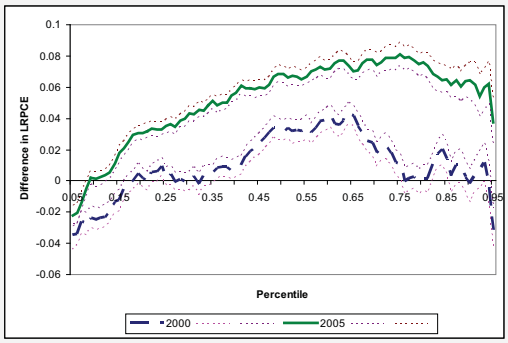
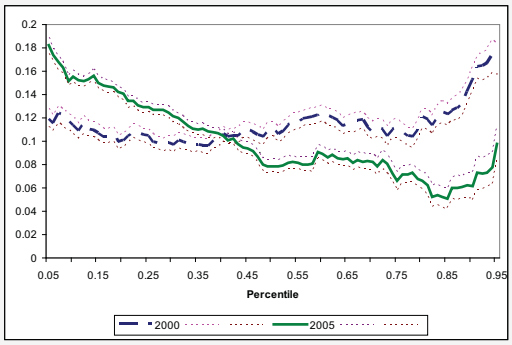


Figure B: Return effects for IR-LIR Gap (2000 and 2005) and 95% Confidence Intervals



What do the "return gaps" between IR and LIR households imply?

37. Spatial inequality in living standards in developing countries is often partly explained by differences in rates of returns to observable household characteristics – as is the case for Bangladesh. While migration would tend to equalize returns to endowments across regions, these returns can vary across space even in countries (like Bangladesh) with no apparent legal restriction on migration. As mentioned earlier, spatial differences in returns are possible even with free factor mobility if there is location-based "sorting" of households and economic activities by *unobserved* attributes, if regions differ in terms of local public capital, and/or if there are barriers to migration (also see Annex 4, section II).

38. None of the above factors affect all households and locations equally. The sorting of unobserved attributes is likely to be more important for relatively better-off households and urban areas where agglomeration forces can attract high-return economic activities. On the other hand, the differences in returns between *rural* areas across regions for better-off households are likely to reflect the differences in attributes like public infrastructure and market access across regions. Barriers to migration are more likely to affect poorer households.

39. The IR-LIR differences in returns can be examined in the light of the above arguments (see Annex 4, section III). Differences in returns for better-off households are smaller for *rural* areas of the two regions, which suggests *sorting of households and economic activities* with unobserved and better attributes to urban areas within IR.[18] This is consistent with the pattern of agglomeration of high-return economic activities in the main urban center of IR, namely Dhaka and its surrounding areas (see Figure 4-5 above). Higher urban agglomeration in IR compared to LIR is also consistent with an earlier finding (chapter 2) that the urban premium on wages is much higher for the eastern divisions than for the west. Between 2000 and 2005, the urban-rural gap in returns for better-off households in IR increased sharply, suggesting increasing

[18] This is also consistent with the sorting by *observed* characteristics of households, resulting in the characteristics improving faster in IR as seen above (see paragraph 32 above).

agglomeration in the urban areas within IR, with Dhaka playing a major role given its size relative to other urban areas.

40. But the gaps in return effects across rural areas in IR and LIR are still substantial, even for the upper quantiles – suggesting that *differences in availability of public capital and market access* play a key role in sustaining differential returns across regions. This is also consistent with the findings of section II that characteristics like travel time to Dhaka and access to infrastructure partially account for the effects of location on household expenditures. The average travel time to Dhaka for households in IR is 33 percent lower than that in LIR. Forty-five percent of households in IR are connected to electricity, compared to 22 percent of those in LIR. Given the importance of market access and infrastructure for the private sector, differences in these indicators explain why employment in the nonfarm sector (including self-employment) grew much more rapidly in the East than in the West between 2000 and 2005 (chapter 2).

41. The significant IR-LIR gaps in returns for households at the *lower* half of the distribution are consistent with *barriers to mobility faced by the poor*. There is virtually no difference in returns to observed household attributes across urban and rural areas *within* each region for poor households, which seems to suggest no serious barrier to their mobility within IR or LIR.[19] The results suggest that while *within* each region, migration helps to equate returns for poorer households, the barriers created by the rivers impose significant costs to migration *between* regions – for example by hindering short-term migration and commuting, which in turn can limit the formation of migration networks (see Annex 4, section III). These barriers contribute to sustaining and even widening the differences in returns between IR and LIR among the poorer households.

Increase in spatial concentration over time[20]

42. The results above suggest *increasing* agglomeration in the urban areas within IR. This seems to be supported by Economic Census data on employment in firms with Total Persons Employed (TPE) of 10 or more. Figure 4-9 below shows a clear trend of increasing concentration in urban and peri-urban areas, especially Dhaka city and its surrounding areas between 2003 and 2006.[21] Large increase in formal sector employment occurred in Dhaka and its surrounding areas, along with smaller increases in other large cities. These were accompanied by reductions in employment in some of the country's outlying areas and no discernible change in most parts of the country. Disaggregation by sectors reveals that the largest increases in formal sector employment have occurred in agro-processing industries that includes RMG.

43. What has led to the high concentration of economic activities in urban and peri-urban areas surrounding growth poles? Important factors influencing a firm's decision to locate in an area appear to be urbanization and spatial (or agglomeration) economies, the degree of competition, and specialization and diversity of economic activities. Market size and specialization in the nearest growth pole exert significant influence on where a new entrant is likely to locate; such spillover effects are relatively weak for small and medium sized cities (see Box 4.4).

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[19] This is also broadly consistent with an earlier finding (see chapter 1): while the urban share of the population increased by 23 percent between 2000 and 2005, the rural-urban population shift occurred more within divisions than across divisions.

[20] Maps and figures using Economic Census are taken from World Bank (2008c, draft).

[21] Most of the data from Dhaka and other urban areas for the Economic Census of 2003 was actually collected in 2001. Thus the time period for comparison for urban areas where most of the firms are located (2001-2006) roughly corresponds with that for HIES surveys (2000-2005).

Box 4.4: Factors influencing the location decisions of start-up nonfarm enterprises

A recent World Bank study using the Non-Metro Investment Climate Survey (NMICA), 2007 sheds some light on why firms tend to locate in areas surrounding growth poles. Consistent with evidence from other countries, *urbanization economies* have a positive and significant role in attracting enterprises to a location in Bangladesh. A larger urban center offers higher effective demand for products, allows diverse activities to flourish, provides a pool of skilled workers and offers better public services that reduce costs of doing business. *Access to large markets* also plays an important role in firms' location decisions. While peri-urban areas are within 45 km of four major metropolitan areas (Dhaka, Chittagong, Khulna and Rajshahi) with population of 500 thousand or more, the smaller towns and rural areas are on the average 160 km and 190 km away from these major market centers

Spatial/agglomeration economies are important in attracting start-ups to locations around metropolitan areas in Bangladesh. Agglomeration economies, generated because firms in a given location can share sector-specific inputs, skilled labor and knowledge, intra-industry linkages and opportunities for efficient sub-contracting, can have significant positive effect on the productivity of firms located near urban centers. Due to these reasons, the *degree of competition* and *diversity of activities* are among the most important factors behind a firm's decision to locate in or near metropolitan areas. As enterprises cater to demand from outside their location and learn from enterprises located in other areas, *spatial inter-linkages* and *spillover* may also influence enterprise entry in a location. Spatial inter-linkages arise when firms benefit from proximity to urban markets and firms engaged in similar activities. Spillovers result from market size and specialization in the nearest urban centers, and tend to be much weaker for small and medium-sized towns than for large cities.

Source: Bangladesh Rural Investment Climate Assessment (World Bank 2008b, draft)

44. An interesting pattern emerges from the spatial trends in employment within the greater Dhaka area. Large increases in formal sector employment occurred in the outlying areas to the north and west of Dhaka City Corporation, while employment in the city center of Dhaka (close to the river in the south) declined, although it still remains extremely dense (Figure 4-10).

Figure 4-9: Changes in employment (2003-2006)

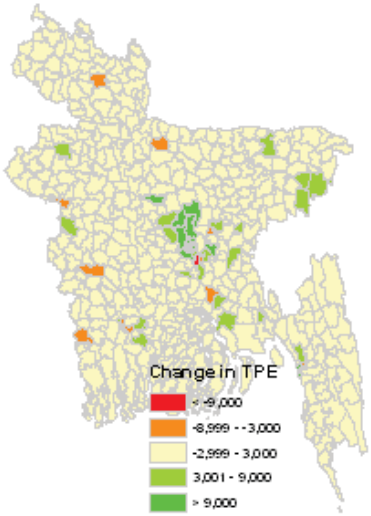
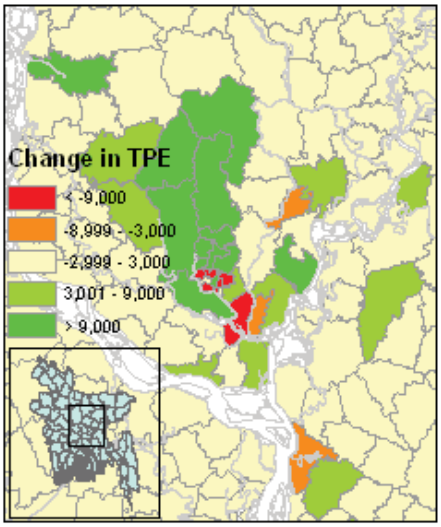


Figure 4-10: Changes in employment in Dhaka city and surrounding areas (2003-2006)



Note: Employment in firms with TPE of 10+; green indicates positive change, with darker green indicating higher values; red indicates negative change, with darker red indicating higher absolute values.
Source: Economic Census (2003 and 2006)

45. Thus even as there is a tendency towards higher concentration in the greater Dhaka region, *within* the region there is a trend of dispersion from the core of the city to outlying areas, particularly to the north and west. This may be a result of increasing agglomeration costs in the main city (Box 4.5). Another question is why the dispersion occurred primarily to the north and west of the main city, and whether this is related to infrastructure and other factors that influence business climate (Box 4.5). The simultaneous trends of increasing concentration in the greater Dhaka region and dispersion from the core towards the outlying areas within this region are consistent with the regional poverty trends in section I – four out of the five districts bordering Dhaka district experienced poverty reduction well above the national average.

Box 4.5: Dispersion of economic activities to peri-urban areas surrounding Dhaka

With very high concentration of economic activities in metropolitan Dhaka, congestion costs appear to be mounting in these areas (World Bank, 2008b draft). The urban primacy of Dhaka is already considerably higher than the "optimal primacy" rate (share of an urban center in total urban population of the country) suggested by the cross-country analysis in Henderson (2003), which is also likely costing the country in terms of GDP growth (World Bank, 2007a).[22] Anecdotal evidence also suggests high agglomeration or congestion costs in Dhaka city. The real estate price in metropolitan areas, particularly in Dhaka city, has skyrocketed and is higher than even in many developed countries. Severe congestion along with unsatisfactory delivery of basic urban services has also added substantially to the cost of doing business in Dhaka. Due to these mounting costs, there is an increasing trend of enterprises moving out of Dhaka into surrounding peri-urban and rural areas. Such spreading of activities from city centers to outskirts has also contributed to substantial improvement in living standards in those areas (World Bank, 2008a draft; World Bank, 2007).

Compared with the Dhaka metropolitan area, peri-urban and even areas classified as "rural" surrounding Dhaka city offer many advantages to start-up firms, including higher availability of land, cheaper labor and less congestion. At the same time, these areas allow firms to exploit the spillovers and some of the positive externalities of agglomeration from being located near Dhaka city. Regression analysis shows that proximity to growth poles has a positive and significant influence on productivity of firms. Thus areas to the north and west of Dhaka City Corporation (e.g. Gazipur, Savar) have seen rapid expansion of economic activities. Factors like cheaper (formerly agrarian) land, easy road access to Dhaka and the formation of Export Processing Zones (EPZs) have facilitated growth in these areas.

Explaining regional disparities: the importance of local factors

46. The factors suggested by the analysis above – lack of availability of public infrastructure, inadequate market access and lack of integration with the growth poles – represent the significant economic disadvantages faced by LIR vis-à-vis IR on the *average*. In addition, a range of local conditions are important in explaining regional disparities in poverty, including differences across areas *within* IR and LIR, which are not fully captured by the broad IR-LIR (or east-west) approach adopted here. As noted in section II, severe seasonal deprivation (*Monga*) contributes to chronic poverty in the greater Rangpur region and natural disasters like cyclones are likely to have had a lasting economic impact in the southern coastal districts. Ecological factors like river erosion on both sides of Brahmaputra contribute to relatively high poverty in Jamalpur district in IR, as does the presence of depressed land with large water bodies (called *Haor*) in Netrokona and Sunamganj districts in IR (in the old districts of Mymensingh and Sylhet respectively).

[22] At Bangladesh's income and urbanization levels, Henderson's estimate suggest an optimal primacy rate of 21 percent for Dhaka compared to its actual primacy of 32 percent, which translated to a 2 percentage point loss in GDP growth in his cross-country model (World Bank 2007a).

Quality of land also contributes to economic deprivation – for example, the intrusion of saline water into the southern coastal districts that prevents multiple cropping.[23]

47. A comprehensive analysis of the local factors contributing to poverty is not possible with current sources of data, given that HIES data is not even representative at the level of old districts. To address this need, a poverty mapping exercise is about to be completed, which will provide poverty estimates at the *upazila* (sub-district) level by combining census and HIES data using the statistical technique of small area estimation. The poverty map will help identify poor areas more accurately and help understand how differences in local characteristics (such as infrastructure, service delivery, agro-climatic conditions and so on) contribute to differences in poverty incidence across geographic areas. Such analysis can be valuable in designing policies that offer solutions tailored to the constraints faced by local economies in different parts of the country.

IV. Implications for policies to reduce regional inequality

48. Regional inequality in economic development is common around the world. Over the years, countries have implemented three types of policies to address regional inequality within a country. The first involves spatially "blind" policies such as tax and transfers, intergovernmental transfers, reforms in housing and land markets and investments in human capital. Although these policies may not be designed with any spatial considerations, they can have varying impacts across regions. For instance, a progressive income tax system along with similar sub-regional fiscal revenue sharing system can benefit the relatively lagging regions; and investments in health and education can produce a skilled labor force to the benefit of both leading and lagging regions. The second set of policies aims at improving connectivity among regions and incentives to foster mobility of people in lagging regions. The third set of policies involves providing spatially targeted incentives to firms and people to locate in lagging regions. Historical experience (mostly with developed countries) suggests that the first set of policies tend to be most effective in promoting regional convergence in economic development.[24] However, most developing countries including Bangladesh find it difficult to adequately finance even basic government services, leaving little room for fiscal transfers to address regional inequalities.

49. The set of policy instruments needed to foster development of the lagging regions ultimately depends on the factors that drive the regional differences in the first place. In this respect, Bangladesh offers a few advantages. First, the country is densely populated making investment in connectivity feasible and yielding high returns. Second, much of the interregional differences in Bangladesh are due to factors unrelated to ethnic divisions or other non-economic barriers to migration, which are potentially harder to address than economic barriers. Indeed, the findings of section III suggest fewer barriers to spatial mobility of the poor *within* regions.

Improving endowments in lagging regions

50. As differences in physical and human endowments contribute significantly to the IR-LIR expenditure gap, narrowing of this gap would require investing in productive assets and enhancing employment opportunities and human development in LIR. Indirect evidence suggesting that households/individuals with better attributes are more likely to migrate from LIR to IR also implies that investments to improve human capital of the poor would enhance their ability to access better opportunities in growing regions. Improving credit access to household

[23] We are grateful to Professor Wahiduddin Mahmud for pointing out these examples in his comments on an earlier draft of the report.
[24] See World Development Report (2009).

nonfarm enterprises (microfinance) can also reduce the welfare differences within each region. Given the widespread availability of microfinance, investments in promoting small and medium enterprise lending are likely to have greater returns.

51. Investments in human development may not be sufficient by itself to close the economic gap between IR and LIR, given that human development outcomes in LIR are already on par or superior to those in many areas of IR (see chapter 5). The fact that differences in *returns* to endowments contribute significantly to the IR-LIR gap suggests the need for other types of intervention as well.

Improving returns to endowments: urban policies and regional development

52. Substantial differences in returns to household attributes persist *across* IR and LIR regions. Reduction of the IR-LIR gap would thus require policy interventions that affect the rates of returns, which the findings of this chapter suggest must include steps to improve the access to public services and market connectivity for lagging regions. The question of how to improve returns to factors in lagging regions is closely linked to two broad policy questions. The first is how to gain the most out of the urbanization process ongoing in Bangladesh and spread economic dynamism beyond the major growth poles, including urban areas in LIR. The second and related question is how to stimulate economic growth in LIR, by improving links to IR and within LIR.

53. Rapid urbanization in Bangladesh creates opportunities for poverty reduction, as apparent from the benefits generated by the growth poles in the eastern part of the country. Careful urban management policies would help in gaining the most out of this process and spreading the benefits to lagging areas. The economic dynamism of Dhaka and its spillovers to surrounding areas makes it a magnet for economic activities and migrants; but the city's already stretched services and infrastructure imposes costs on enterprises and therefore on the economy as a whole (World Bank, 2007a). On the other hand, the urban areas in LIR lag behind those in IR both in terms of household characteristics and returns to those, suggesting that weak agglomeration and spillover effects in the former. LIR lacks growth poles like Dhaka and Chittagong; and smaller towns are especially deficient in terms of attracting economic activities when compared to the large metros and peri-urban areas. The urban policy challenge therefore has two elements: (i) improving the access to basic infrastructure and services in major metropolitan areas; and (ii) improving the prospects of smaller towns and secondary cities to emerge as growth centers.

54. Recent development literature suggest that spreading growth to smaller towns and cities and reducing the agglomeration costs in the main growth centers require coordination between urban policies at various levels. Optimal urban concentration levels are achieved when there are institutional mechanisms internalizing the benefits and costs of agglomeration in migrants' and enterprises' private decisions. A combination of integrated urban planning by proactive autonomous local governments and well-functioning urban land markets can create interconnecting incentives that allow cities to achieve optimal sizes and improve infrastructure and services (see Box 4.6).[25] For Bangladesh, other World Bank reports have identified a number of specific areas for attention with regard to urban policies.[26] Examples of reforms in urban policies include increased devolution of key services to city governments to improve accountability, enhancing their own revenue sources, correcting policy biases that have worked against the emergence of smaller cities, and creating the right incentive structures and competition among cities.

[25] See Krugman (1999); Henderson and Becker (2000); Henderson and Wang (2005).
[26] See World Bank (2007a) and World Bank (2008b, draft).

55. International experiences also suggest that investments in interregional transport infrastructure can promote regional development by improving connectivity of remote areas to growth poles (Box 4.6). Experience with such strategies has, however, been mixed. For instance, improving connectivity between regions may lead to further concentration of activities in leading regions (see Box 4.6) as has happened in the case of Italy, Brazil and China. Transport improvements also may not be enough to promote regional growth and require complementary investments in other factors that matter for investment climate. That said, improved connectivity is likely to reduce interregional differences in living standards by improving agricultural specialization and commercialization and the mobility of people.

Box 4.6: Stimulating regional growth and reducing urban concentration in the primary city

Henderson and Becker (2000) suggest that *decentralization of powers and democratization of local governments* is a powerful path to achieving optimal levels of urban concentration. A similar result can be achieved, at least theoretically, through *market forces in land markets*, provided these forces can operate without monopolies or other kinds of distortions. Henderson (2003) also finds that investment in national roads and highway systems significantly helps in spreading urban growth beyond the main city. Similar results are obtained by Gallup and others (1999), who suggest that historical investments in national navigable waterways induce inland habitation and significantly reduce urban concentration. Rosen and Resnick (1980) find rail investment reduces urban concentration and promotes regional growth centers. Taking a country example, the deconcentration of industry from the greater Sao Paulo region in Brazil to lower-wage hinterland cities followed major transport corridors first through São Paulo state and then into Minas Gerais, the interior state with the main iron ore and other mineral and agricultural reserves.

Transportation links may however also have opposing effects (Krugman 1991, 1999). Lowering transportation costs can enable firms in large cities to compete with local producers in remote areas. The competitive advantages enjoyed by firms in the main urban area may then actually conspire to harm local business in hinterlands and induce the perverse effect of further concentration in larger cities. The net effect of investing in better connectivity on growth of alternate urban centers therefore depends on which of the two opposing effects dominates.

56. In Bangladesh, investments in interregional transport and communication systems – including bridges across major rivers – can improve links between smaller and larger markets, attract investment to secondary cities and towns and reduce the pressure on Dhaka metro (World Bank, 2007a). To be effective, however, these investments will need to be complemented with improvements in the urban infrastructure and public services of the lagging region, for which urban management policies would play a key role as described above.

57. Investment in infrastructure, especially in developing inter-regional highway systems, is likely to improve connectivity between IR and LIR and increase access of LIR residents to growth poles. The findings of this chapter also suggest that improving connectivity with Dhaka and the local markets and improving access to services like electricity are likely to generate economic benefits in remote areas. The aforementioned NMICA (2007) survey finds lack of connectivity and poor access to and quality of electricity to be among the major constraints facing nonfarm enterprises. Low demand is identified as one of the most binding constraints by nearly 40 percent of rural and small town enterprises. Most enterprises face daily power outages and lose about 3 to 4 percent of their sales revenue due to power outages. Unreliable electric supply affects enterprises located in small towns disproportionately.[27]

58. Since the two large rivers act as natural barriers to connectivity between LIR and IR, investment in river bridges – particularly connecting the southwestern part of the country (Barisal

[27] Eighteen percent of enterprises in small towns mention access to electricity and unreliability of its supply due to power outages to be a major constraint, compared with 10 percent in peri-urban areas (World Bank, 2008b)

and Khulna) to the east – would have a large impact on connectivity. The experience of Jamuna Bridge is instructive; the completion of this bridge in 1998 brought enormous benefits to the northwest, which used to be among the poorest regions of the country. The bridge is likely to be an important reason why poverty reduction in northwest during 2000-2005 outpaced that in the southwest, which remains separated from the rest of the country by the two large rivers (Box 4.7).

Box 4.7: The Jamuna Multipurpose Bridge – connecting Rajshahi with the east

One of the largest rivers in the world, the Jamuna (Brahmaputra) physically separates the northwestern part of Bangladesh from the relatively more developed eastern part (or IR in this chapter). The 4.8-kilometer-long Jamuna Multipurpose Bridge, completed in June 1998, has opened immense opportunities for economic development for the northwest that has spillover effects on the entire country. More than 30 million people are now better connected to the country's transport and infrastructure network, and enjoy lower transport costs and quicker travel times. For example, bus travel time from Dhaka to the trade city of Bogra was reduced from eight hours to four while truck travel time was reduced from 20 hours to 6 hours. Transport costs have been reduced and access to key markets like Dhaka has improved for the northwest. Average truck rates per ton went down 30 percent after the bridge opened. Traffic over the bridge has increased by 11.5 percent annually since 1999. Figures on bridge usage suggest increased integration of Rajshahi with the east.

Poverty trends from HIES hint at the poverty impact of greater integration brought about by the Jamuna bridge. While still among the poorest regions in the country, Rajshahi division has achieved substantial economic improvement since 1998. Between 2000 and 2005, per capita expenditures in Rajshahi division grew almost 9 percent, while poverty incidence fell from 57 to 51 percent (chapter 1). This stands in contrast to the Barisal and Khulna divisions, which are cut off from the east (IR) by river Padma and from the northwest by the river Jamuna. Both Barisal and Khulna were less poor than Rajshahi in 2000, but experienced no reduction in poverty during 2000-2005 (chapter 1).

59. Given that lack of migration networks may limit the poor's mobility ability to improve returns to their endowments by migrating from LIR, programs to bridge the information gaps between IR and LIR (such as publicizing job and housing information of IR in LIR) can facilitate mobility. The Government has recently taken innovative steps to facilitate organized contract migration from the *Monga*-prone greater Rangpur districts in the northwest to foreign countries (see chapter 3). Innovations along similar lines can also be piloted to facilitate domestic migration from poor rural areas in LIR.

60. Spatially targeted incentives have been tried in many countries, through investment subsidies, tax rebates, location regulations, and provision of services in designated areas such as special economic zones (SEZs). Experience with spatially targeted incentives in India and China, particularly Special Economic Zones (SEZs), shows that these incentives are more likely to succeed when they reinforce geographical advantages. For instance, the successful SEZs in China were established along the main coastal cities which were simultaneously opened to international trade and investments. Experiences like these, as well as Bangladesh's own experiences with SEZs, can guide future policy in designing spatially targeted incentives to stimulate growth centers in the less integrated region. Spatially targeted programs can also be used to create rural livelihoods in the nonfarm sector and improving credit access to household nonfarm enterprises in lagging regions. Such interventions are especially necessary to address structural poverty in certain areas, for example areas affected by seasonal shocks like *Monga* or natural disasters.

5. Creating Human Capital: Bridging the Access and Quality Gap

1. Previous chapters have highlighted that investments in human capital development are critical to reduce poverty in Bangladesh. For example, higher education among household members enhances employment opportunities in the non-farm sector and reduces the likelihood of poverty. Improving human capital endowments is also likely to enhance the mobility of the poor from lagging regions, as mentioned in chapter 4. Other than its impact on consumption poverty, human development is a critical objective in itself, with interrelated effects on other development outcomes – for example, improved nutrition levels among children lead to better schooling outcomes, healthier adults, and higher lifetime earnings.

2. This chapter discusses a number of gains and challenges evident in human development in Bangladesh, focusing on the health and education sectors. Bangladesh has seen gains across the population distribution in education and health outcomes, and is well on the way to achieving its Millennium Development Goals in areas such as infant and child mortality and even met its MDG in gender parity in primary and secondary schooling by 2005[1] (10 years ahead of time). However, a range of inequalities in opportunities and outcomes persist in both sectors, and the poor still face many challenges in accessing quality education and health services.

3. The *rich-poor gap* is evident, for example, in that better-off households have tended to benefit from gains in nutrition to a greater degree than poor households. Boys from poor households, meanwhile, appear to be getting left behind in the gains that the country has made in educational attainment compared to both girls in poor households and boys in better-off households. In addition to *income and gender disparities*, somewhat unexpected variations exist in both health outcomes and education outcomes *across divisions*. In particular *higher poverty rates* at the division level, interestingly, seem to coincide with both better health and education outcomes.

I. Health sector: gains and ongoing challenges

4. As discussed in Chapter 1, Bangladesh experienced a substantial decline in poverty over the past decade. This section explores whether Bangladesh has seen corresponding gains in the health status of poor households during that period. The country has made some progress in improving health outcomes and service utilization, including considerable gains in reducing the gender gap in infant mortality rates, for example. The rich-poor gap (proxied by the top and bottom quintiles respectively), however, remains unchanged and has even worsened for a number of indicators. In particular, this section discusses inequalities in health access and outcomes based on Demographic and Health Survey (DHS) data from 1996-1997, 2004, and 2007.

Access: service utilization, availability and spending

5. Policy changes in 1998 focused on improving poor households' utilization of primary or essential care services through the Essential Services Package (ESP). The ESP was also intended to reduce inequalities between poor and better-off households. Although the period between 1996-1997 and 2004 saw an increase in households' overall use of health services such as family planning, antenatal care, and immunization of children, the absolute rich-poor gap widened for most services (Table 5.1). Gender gaps in utilization, moreover, exist mainly among the poor.

[1] World Bank (2007c) "To the MDGs and Beyond: Accountability and Institutional Innovation in Bangladesh."

6. The Expanded Program on Immunization or EPI, a priority program which aims to immunize all children under one year of age against the six vaccine-preventable diseases, has led to substantial improvements in *childhood immunization coverage* (including tetanus toxoid immunization) over the past decade. Full basic immunization coverage rose from 47 percent in 1996-1997 to 58 percent in 2004 for the bottom 20 percent wealth quintile and 67 percent to 87 percent for the top 20 percent wealth quintile.[2] While there have been gains across the board, this improvement occurred primarily among better-off households. Low coverage of *measles* immunization among poor children is a factor behind this widening inequality, with measles immunization actually dropping for the poor during the same period from 62 percent to 60 percent. The percentage of children with full basic immunization coverage also shows a gender gap among the poor: 55 percent for poor girls versus 60 percent for poor boys in 2004. In the case of rich children, however, the coverage among girls is higher than that among boys (see Table 5-1 for further details).

Table 5-1: Trends in service utilization, 1996-1997 and 2004

	2004			1996-1997		
	Bottom 20%	**Top 20%**	**Gap (Top – Bottom)**	**Bottom 20%**	**Top 20%**	**Gap (Top - Bottom)**
Vitamin A dose – children (% children 9-59 months)	74.5	83.1	8.6	66.3	76.3	10.0
Childhood immunization (% children 9-59 months): Full basic coverage	57.5	86.7	29.2	47.4	66.6	19.2
Childhood immunization (% children 9-59 months): Measles	59.6	90.5	30.9	62.4	82.6	20.2
Curative care for children with fever 12-23 months: Overall	8.9	39.1	30.2			
Curative care for children with fever 12-23 months: Public	2.4	7.3	4.9			
Curative care for children 12-23 months: Private	6.5	31.8	25.3			
Total fertility rate (Births per woman 15-49)	4.1	2.2	-1.9	3.8	2.2	-1.6
Adolescent fertility (Births/1000 women aged 15-19)	189.9	85.4	-104.5	187.0	91.0	-96.0
Contraceptive prevalence rate (% currently married)	44.7	50.0	5.3	38.8	48.5	9.7
Antenatal care by medically trained person[1]	24.9	81.1	56.2	16.0	62.3	46.3
Tetanus toxoid (%)	77.4	92.2	14.8	70.0	90.2	20.2
Delivery attended by medically trained person[2]	3.3	39.4	36.1	1.8	29.8	28.0
Delivery at home (% women)	97.6	67.9	-29.7	98.5	80.5	-18

Note: Based on quintiles of wealth index. Age at first birth refers to median age at first birth reported by women aged 20-24. Detailed DHS 2007 data was not yet available at time of publication.

7. Bangladesh has also effectively utilized the EPI and doorstep delivery of services by female health workers to provide *Vitamin A supplementation* to children under age 5 to prevent outcomes such as night blindness, reaching both rich and poor children. The rich-poor gap in Vitamin A supplementation fell between 1996-1997 and 2004, declining from 10 percent to around 9 percent during that period. No differences are evident in terms of gender. Another success of the EPI program is an increase in the percentage of women, poor, and rich, receiving *tetanus toxoid immunization* during pregnancy. Inequality in application of this coverage has also declined substantially, with the rich-poor gap dropping from 20 percentage points in 1996-1997 to 15 percentage points in 2004 (see Table 5-1).

8. Despite good access to family planning services, however, poor pregnant women's contact with the health system is very limited in comparison to better-off pregnant women. In 2004, only 34 percent of all poor pregnant women utilized antenatal care services as compared to 84 percent of all rich mothers.

[2] The DHS defines socioeconomic status in terms of assets or wealth, rather than income or consumption that are unavailable from the survey; households are classified into quintiles based on their wealth or assets index using the principal components approach described in Filmer and Pritchett (2001).

Furthermore, the percentage of pregnant women accessing antenatal care by a trained medical provider increased for all quintiles between 1996-1997 and 2004, but most of this increase was for better-off women. The gap between rich and poor pregnant women receiving antenatal care by medically trained providers between 1996-1997 and 2004 grew from 46 percentage points to 56 percentage points (see Table 5-1).

9. The lack of use of professional facilities for childbirth remains a key factor behind maternal mortality among the poor. Not surprisingly, inequality is also evident in the type of provider used. Women in poor households are more likely to use government health facilities for antenatal care and better-off women are more likely to use private providers. Lack of adequate care during child delivery across wealth quintiles continues to be problematic in Bangladesh and has been linked to the country's high rate of maternal mortality. An increase in trained attendance at birth (from 30 percent to 39 percent) and a reduction in births delivered at home (from 81 percent to 68 percent) were seen among women in the top quintile between 1996-1997 and 2004. Poor women, however, experienced very little change in their use of these services during this period. The bottom quintile of women saw an increase from 1.8 percent to only 3.3 percent in trained attendance at birth 1996-1997 and 2004, and deliveries at home during this period declined by only around 1 percentage point for this group.

10. A larger percentage of boys than girls receive treatment from private providers. Girls are more likely to receive treatment from government providers, suggesting that households, poor and rich alike, are more willing to pay for better quality care for boys than girls. Regardless of gender and type of provider, the poor are far less likely to seek treatment compared to the non-poor for the same illness. For example, there was a 30.2 percent gap in use of medical treatment for fever between children in the bottom and top quintiles in 2004.

Table 5-2: Incidence of public health expenditure, 2005

	Quintiles						Poverty status			
	1	**2**	**3**	**4**	**5**		**Poor**	**Non-poor**		**Total**
Panel 1: Using World Bank (2002) assumptions to break down health spending by function										
Family planning and communicable diseases	20.8	20.0	19.8	20.2	19.2		40.8	59.2		100
Adult curative care	15.1	17.6	18.2	23.9	25.2		33.0	67.0		100
Maternal health	18.7	19.9	19.4	20.8	21.2		38.7	61.3		100
Child health	25.9	21.2	18.5	18.4	16.0		47.0	53.0		100
Total	**19.7**	**19.5**	**18.9**	**21.1**	**20.8**		**39.3**	**60.7**		**100**
Panel 2: Using Health Economics Unit (2004) assumptions to break down health spending by function										
Maternal and child health, family planning, counseling	22.1	20.6	19.1	19.2	19.0		42.7	57.3		100
Adult curative care	15.9	16.6	21.1	23.0	23.4		32.6	67.4		100
Total	**18.2**	**18.0**	**20.4**	**21.7**	**21.8**		**36.3**	**63.7**		**100**

Source: Al-Samarrai (2007b), background paper for this report.
Notes: Spending on family planning and communicable diseases in Panel 1 is assumed to benefit the whole *upazila* (sub-district) population equally. Therefore, differences across quintiles are driven by differences in spending and levels of poverty across *upazilas*. Adult curative care is based on curative care visits of individuals aged 6 and over. Maternal health uses utilization rates of government prenatal, postnatal and delivery services. Child health uses utilization rates of government immunization services and curative visits of children aged 5 and under. Utilization of prenatal, postnatal, delivery, immunization and curative visits for children aged 5 and below are combined to calculate a utilization rate for the first row of Panel 2.

11. Total health expenditures in Bangladesh relative to GDP are comparable to other countries in the region. Expenditures per capita and adjusted for purchasing power parity, however, suggest that Bangladesh is ahead of only Myanmar in terms of health spending (Begum and Dmytraczenko 2008). A benefit incidence analysis using two different approaches from the World Bank and the National Health Account (see Table 5-2) suggests that *public spending* on each quintile's share of expenditures on family planning, communicable diseases and maternal health is about equal to their population share. However,

even when the poor receive less than their share of spending, they may benefit more. Studies show that while public spending has no significant effect on the health of the non-poor, it has a positive marginal impact on the health of the poor (Wagstaff 2003).

12. Outside of income and gender inequalities, the general *quality of public service provision* continues to be low. High rates of absenteeism are evident in public health care, reaching as high as 40 percent at the sub-district level, with small facilities in rural areas bearing the brunt of the problem (Chaudhury and Hammer 2003). Availability of human resources does not compare favorably with neighboring India and Pakistan, with Bangladesh having 26 physicians per 100,000 population compared to 60 per 100,000 in India and 74 per 100,000 in Pakistan.[3] Bangladesh, however, has a comprehensive network of health facilities across its 64 districts, with a 50-200 bed hospital in each district. Results from a recent national level survey show inequalities in both experiences and perceptions across a range of services, both in health and education (see Box 5.1 in section II).

Outcomes: health and nutrition

13. Bangladesh has made significant gains in terms of reducing *fertility and mortality rates*. Data from DHS 2007 show that the country's total fertility rate is 2.7 births per woman, down from 5.1 births per woman in the mid-1980s. However, there are some signs of this trend leveling off in recent years. Improved access to family planning service due to Bangladesh's successful doorstep delivery program led to a sharp increase and reduction in inequality in the contraceptive prevalence rate. This rate rose, for example, from 39 percent in 1996-1997 to 45 percent in 2004 amongst the bottom 20 percent of poor married women. The gap in contraceptive prevalence rates between the bottom 20 percent wealth quintile and top 20 percent wealth quintile also narrowed over the same period.

Table 5-3: Inequality in early age mortality, 1985-1996 and 1994-2003 (Deaths per 100,000 live births)

	1994-2003				1985-1996			
Mortality rates	**Bottom 20%**	**Top 20%**	**Overall**	**Gap (Bottom-Top)**	**Bottom 20%**	**Top 20%**	**Overall**	**Gap (Bottom-Top)**
Infant (0-1 year)	89.7	64.8	72.4	24.9	96.5	56.6	89.6	39.9
Child (1-5 years)			26.0				41.9	
Under-5	121.1	71.5	96.6	49.6	141.3	76.1	127.8	65.2
Infant - girls	85.8	57.7	64.3	28.1	93	59.8	84.3	33.2
Infant - boys	93.5	72.1	80.2	21.4	99.8	53.5	94.9	46.3
Child - girls			29.0				47.0	
Child - boys			24.0				36.9	
Under-5 - girls	118.8	64.5	91.0	54.3	149.9	79.8	127.3	70.1
Under-5 - boys	123.3	78.8	101.9	44.5	133.2	72.5	128.3	60.7

Note: Based on quintiles of wealth index.
Source: Gwatkin and others (2007). Analysis of 2004 and 1996/97 rounds of Bangladesh DHS.

14. Successes in family planning, moreover, helped women space their births and reduce the associated risk of infant mortality. Under-5 mortality rate has declined steeply – from 128 per 1000 live births during 1985-96 to 97 during 1994-2003, and subsequently to 65 during 2002-2006 (from the 2007 round of DHS). Rich-poor differences in infant and under-5 mortality have also shown a declining trend (see Table 5-3). In infant mortality, for example, the rich-poor gap declined from 40 percentage points in the period of 1985-96 to 25 in 1994-2003. Moreover, between 1985-96 and 1994-2003, under-5 mortality fell more for girls than for boys to the extent that the rate was significantly lower for girls than for boys in 1994-2003. This was driven by steep declines in infant *and* child (age 1-5 years) mortality for girls. However, girls' risk of dying between the ages of 1 and 5 continued to be higher than that for boys. Furthermore, the

[3] WHO 'Global Atlas of the Health Workforce' (2004).

rich-poor gap in female under-5 mortality continues to be greater than that for male under-5 mortality, suggesting that girls' survival is more strongly correlated with household income levels.

15. There have also been significant improvements in feeding practices, which play an important role in preventing malnutrition among infants. The percentage of infants receiving *timely complementing feeding* has nearly doubled for poor households (to 57.8 percent) and increased more than three times for better off households (to 71.3 percent) between 1996-1997 and 2004. Although the rich-poor gap has increased for this indicator, a gender gap among infants is not evident.

16. Malnutrition among children in particular is an issue of critical importance for a developing country, with numerous adverse short- and long-term impacts. In the short term, malnutrition increases children's vulnerability to diseases and therefore the risk of mortality. In the long term, fetal or childhood malnutrition increases the likelihood of chronic noninfectious diseases in adulthood. Studies using longitudinal data show that malnourished children receive less education[4] – either because their parents invest less in education or because they have higher rates of absenteeism from school due to illness. Poor nutritional status may delay school entry, impair cognitive development, and potentially reduce lifetime earnings due to its impact on childhood learning.[5]

Table 5-4: Trends in inequality in prevalence of malnutrition, 1996-1997 and 2004 (% malnourished)

	2004				1996/97			
	Bottom 20%	Top 20%	Overall	Gap (Bottom-Top)	Bottom 20%	Top 20%	Overall	Gap (Bottom-Top)
Stunting among children under 5 years (moderate and severe)	54.4	25.1	43.1	29.3	61.1	34.8	54.7	26.3
Underweight among children under 5 (moderate and severe)	59.3	30	47.5	29.3	65.2	37.6	56.4	27.6
Stunting – girls	53.6	27.1	43.5	26.5	61.8	44.4	55.1	17.4
Stunting – boys	55.1	22.7	42.6	32.4	60.3	35.4	54.2	24.9
Underweight – girls	59	31.3	48.6	27.7	67.9	38	58.2	29.9
Underweight – boys	59.6	28.4	46.4	31.2	62.5	37.2	54.7	25.3

Note: Quintiles of wealth index.
Source: Gwatkin and others (2007). Analysis of Bangladesh DHSs, respective years.

17. *Child malnutrition and child underweight rates* in Bangladesh have declined significantly since the early 1990s. Underweight rates declined at a rate of 3.6 percent per year during the 1990s, a pace similar to that of Sri Lanka and better than that of India. However, unequal progress in child malnutrition rates remains a challenge. Stunting rates have declined, but most of the decline occurred among children in better-off households, with the rich-poor gap between stunting rates among children under 5 years growing from 26 percentage points in 1996-1997 to 29 in 2004 (see Table 5-4). Although better-off households have experienced more gains in nutritional status than poor households, a strikingly high proportion (25-30 percent) of children in the richest quintile were malnourished in 2004. The overall malnutrition rate in Bangladesh remains high by international standards – higher, for example, compared to sub-Saharan countries with similar levels of per capita income (see Annex 5, Table A-5.1).

[4] A study using longitudinal data from Cebu, Philippines found that better-nourished children were more likely to start school earlier and less likely to repeat grades (Glewwe and others, 2001). Another study using data from rural Pakistan found that malnutrition decreased the probability of ever attending school (Alderman and others, 2003).
[5] A study of adult identical twins in the United States found that, after controlling for genetic and other endowments shared by such twins, low birth weight had a large impact on schooling and wages (Behrman and Rosenzweig, 2004).

18. Disaggregating trends by sex also demonstrates increasing absolute inequality in nutritional outcomes. The difference between the top and bottom quintiles in stunting rate among girls increased from 17 to 27 percentage points, and that in underweight rate among boys increased from 25 to 31 percentage points. A gender gap persists as well – the percentage of girls who are underweight exceeds the percentage of underweight boys by 2.2 percent in 2004, marginally lower than the 3.5 percent gap in 1996-1997 (see Table 5-4). Interestingly, in 1996-1997, girls were both more stunted and underweight than boys in the same wealth quintiles. By 2004, however, girls from the bottom 20 percent wealth quintile were less stunted and underweight than boys in the same quintile but girls from the top 20 percent wealth quintile remained worse off than boys in their wealth quintile.

Regional variations in health outcomes

19. Bangladesh's Health, Nutrition and Population Strategic Investment Plan or HNP SIP for 2003-2010 aims to link expenditures to individual district performance in order to reach either poor districts or districts with poor health indicators. This geographic targeting may well be effective since regional variations are evident across a number of health indicators (see Table 5-5). For example, in 2004, Dhaka division had an infant mortality rate of 75 deaths per 1,000 live births versus Barisal's 61, despite having a lower poverty headcount ratio of 32 percent versus Barisal's 52 percent in 2005. A high degree of concentration is evident for the 2007 figures on child malnutrition as well. Sylhet and Chittagong stand out as consistently having some of the worst outcomes (among the highest child and under-5 mortality rates and stunting rates) in 2004 and 2007, while Khulna stands out as having the best outcomes (lowest child and under-5 mortality, stunting and underweight rates).

Table 5-5: Early age mortality and prevalence of malnutrition by division

	2004			2007		2005
	Infant mortality rate	**Child mortality rate**	**Under-5 mortality rate**	**Stunting** (under 5 years)	**Underweight** (under 5 years)	**Poverty headcount rate**
Barisal	61	32	92	47	46	52
Chittagong	68	39	103	46	42	34
Dhaka	75	27	99	44	40	32
Khulna	66	13	78	35	34	46
Rajshahi	70	17	86	42	43	51
Sylhet	100	29	126	45	42	34

Source: Mortality rates are from Bangladesh DHS 2004 and malnutrition rates are from Bangladesh DHS 2007.

20. Interestingly, these patterns do not correlate well with poverty rates at the division level, as Sylhet and Chittagong have among the lowest poverty rates and yet also have among the worst child outcomes. Khulna, on the other hand, has one of the highest poverty rates and yet has among the best child health outcomes. Division-level variation in service utilization shows a similar trend (see Table 5-6). In 2007, Sylhet had among the lowest rates of Vitamin A supplementation for children (at 88 percent) and percentage of children with full basic immunization (71 percent). Khulna, on the other hand, had among the highest rates of utilization of all these services in 2007 (91 percent with Vitamin A supplementation and 89 percent with full basic immunization, for example). The exception to this pattern is Barisal, which, during the 2002-2006 period, fell behind other divisions in terms of outcomes and, by 2007, appears to be among the three divisions with the worst outcomes while also having the highest poverty rate.

21. The mismatch between poverty and human development outcomes at the spatial level, especially with respect to health indicators, has been documented in earlier work (BIDS 2001; Sen and Hulme 2006). The fact that such mismatches continue to persist even in the context of higher growth, faster poverty reduction, and accelerated progress in human development witnessed during 2000-2005 is striking.

Table 5-6: Service utilization by division, 2007					
	Vitamin A dose – children (% children 9-59 months)	**Childhood immunization (% 13-23 months), full basic coverage**	**Antenatal care by medically trained person (% women pregnant in past 5 years)**	**Delivery attended by medically trained person (% women giving birth in past 5 years)**	**Poverty headcount rate in 2005**
Barisal	84.9	90.2	43.6	13.4	52
Chittagong	86.0	77.2	52.4	18.5	34
Dhaka	89.7	82.4	48.2	19.8	32
Khulna	90.7	88.9	62.6	26.6	46
Rajshahi	88.8	85.6	55.0	15.4	51
Sylhet	87.5	70.8	46.9	10.9	34
Source: Bangladesh DHS, 2007.					

22. The extent of NGO program coverage could be one explanation behind the spatial divide in health indicators. Lagging regions of Bangladesh ("lagging" defined in income-poverty terms) actually have a much higher concentration of NGO activities than income-affluent regions. From DHS data (2004), the proportion of rural respondents covered by NGOs ranges from 18 percent in Sylhet and 23 percent in Chittagong division to 34-35 percent in Rajshahi and Khulna. Analysis using DHS health data shows the relative advantage of NGO membership across poverty categories (see Annex 5, Table A-5.2) and higher marginal effects of NGO membership on health outcomes after taking into account household and community level controls (see Annex 5, Table A-5.3). Depending on choice of health indicators, the relative advantage of NGO membership over non-members can be in the order of 3-11 percent. There are a number of plausible explanations for this "NGO effect"– such as higher awareness among NGO member households and/or higher expenditures by NGOs on services for member households and spillover effects on non-NGO members residing in the same community (Dev et al 2002, Munshi and Myaux 2006). The analysis here, however, cannot identify which of these are more important in explaining why NGO membership seems to matter for health outcomes in Bangladesh.

23. However, NGO presence is clearly not the only explanation behind these somewhat counter-intuitive trends. Another possible explanation for the slower progress in health indicators in Chittagong and Sylhet is that these regions have a greater historical backlog of relatively conservative social norms, as expressed in higher desired family size, more restrictive attitudes on women's physical mobility and related indicators of female empowerment.[6] These issues merit further explorations in future research.

II. Education sector: gains and ongoing challenges[7]

24. Investment in education in Bangladesh is associated with higher returns in the labor market and higher productivity in the agricultural sector. Higher education among household members – including the household head, his/her spouse as well as other members of the household – has significantly positive impact on the household's economic status (chapter 3). Research on Bangladesh has shown significant intra-household externalities of education – education of household members, and especially that of women, has a significant positive impact on the earnings of even uneducated members of a household.[8] Education is also associated with better health outcomes through income effects as well as direct effects

[6] Higher initial disadvantages of women-related health and demographic indicators in Chittagong and Sylhet date back to the 1974 Census, which may be reflective of the long-term impact of pre-existing, relatively conservative social norms.
[7] This section draws substantially from Al-Samarrai (2007b, 2007c), background papers for this report
[8] Research using 1995-1996 HIES data for Bangladesh finds that an illiterate adult has significantly more nonfarm earnings when living in a family with at least one literate member (holding a range of personal attributes constant); and that these effects are strongest for women (Basu et al 2001).

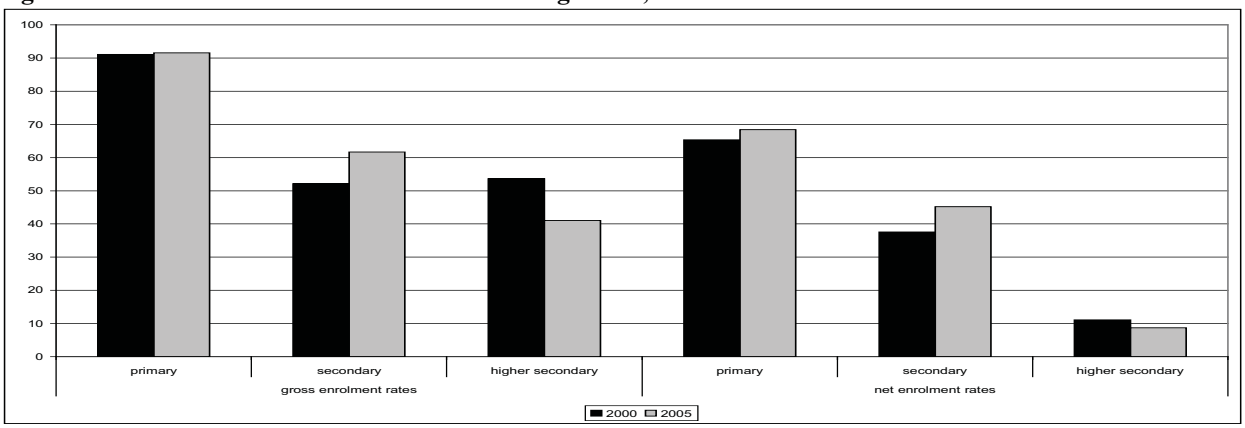
from better knowledge and health practices. Investment in education is thus a key component in the government's drive to improve welfare among the poor.

25. As with other countries, primary school enrolment is correlated with socioeconomic status and gender in Bangladesh. Current policy focuses on improving quality of education while maintaining and improving upon the gains in access achieved during the 1990s. This section explores the extent to which the government has so far been successful in achieving these goals.

Enrolment and completion

26. The 1980s and 1990s saw a steady growth in primary school enrolment, while the 1990s saw a sharp rise in secondary and higher secondary school levels. Primary enrolments increased by 4 percent annually during the 1980s and 1990s, increasing from 8.2 million students in 1980 to 16.8 million in 1998. At the secondary and higher secondary levels enrolments almost tripled from 3 to 11 million students between 1990 and 2000. Female enrolment at the secondary level rose at a faster rate than male enrolment, in part due to the introduction of a country-wide female secondary education stipends scheme. In 1990, girls represented only 27 percent of secondary enrolment compared to 51 percent in 2000. The gender gap also narrowed at the primary school level but more modestly. Female enrolment represented 40 percent of total primary enrolment in 1980 compared to 45 percent in 1998 (see World Bank 2002).

Figure 5-1: Gross and net enrolment rates in Bangladesh, 2000-2005



Source: HIES (2000 and 2005)

27. Bangladesh has seen little change in primary gross enrolment rates since 2000, when it was close to 90 percent (see Figure 5-1), although improvements in net rates indicate that more children of primary school age were attending primary school in 2005. Improvements in primary school completion rates since 2000, moreover, were driven largely by increases in enrolment during the 1990s. Enrolment rates and educational attainment amongst boys from poor households have not kept pace with these gains. Between 2000 and 2005, the rich-poor gap in net primary school enrolment between boys grew from 15 to 16 percentage points, while the corresponding gap between girls narrowed from 14 to 13 percentage points.

28. At the secondary level, the country has experienced substantial growth in enrolment but declining completion rates. Secondary gross enrolment rate rose from 20 percent in 2000 to 30 percent in 2005. Figure 5-1 demonstrates that gross enrolment rates at higher secondary level are low and appear to have declined since 2000. The higher secondary gross enrolment rate was 54 percent in 2000 compared to 41 percent in 2005. Interestingly, this decline has been concentrated amongst the non-poor with the largest decline occurring in the richest 40 percent of households. It is unclear why this has occurred, but it is

possible that declines in secondary completion have affected enrolment in higher secondary. These low completion rates suggest that *improving grade progression* at already existing schools would be critical for improving educational attainment.

Table 5-7: Primary and secondary school gross enrolment rates, 2005

	Primary (Classes 1-5)			Secondary (Classes 6-10)			Higher sec (Classes 11-12)		
	male	**female**	**total**	**male**	**female**	**total**	**male**	**female**	**total**
Quintiles									
1	71	83	77	25	35	30	9	7	8
2	91	91	91	36	48	41	15	13	14
3	98	98	98	54	67	60	24	15	20
4	101	102	101	74	83	78	45	37	42
5	102	96	99	99	96	98	101	95	98
Poor	80	87	83	31	41	36	12	10	11
Non-poor	100	99	100	74	82	78	56	53	55
Rural	90	93	91	55	63	59	32	24	29
Urban	92	93	93	68	73	71	73	75	74
Total	**90**	**93**	**92**	**58**	**66**	**62**	**42**	**39**	**41**

Source: HIES (2005)

29. Despite declines amongst wealthier households, the gap between rich and poor generally widens with years of education. For example, the gross enrolment rate gap between the poorest and richest quintiles is 22 percentage points at primary and 90 percentage points at higher secondary in 2005 (see Table 5-7). The widening of the enrolment gap is due to higher rates of dropping out from school amongst the poor, brought about by factors such as the rising costs of education as students move up the system, the need for young members of the household to work to supplement household incomes and lower levels of investment in education by poor households.

30. While gender parity in enrolment rates at these levels is not uncommon in other developing countries, it is more unusual in South Asia. In 2004, no other country in the region had achieved gender parity in primary school enrolment rates. Also striking are the *larger gender gaps in favor of girls in poor households than in non-poor households* (see Table 5-7). This implies that ultra-poor households send more of their daughters to primary school compared to their sons. A study conducted in northern Bangladesh found that the ultra-poor depend heavily on the labor of their sons from an early age, frequently preventing them from going to school (BRAC and SCUK 2005). However, failure to complete secondary education is particularly pronounced among women with 8 percent having dropped out of secondary school and 10 percent not starting secondary school at all (of those eligible to attend) in 2005.

31. *Completion rates.* Importantly, the majority of children who complete their primary schooling (57 percent of children of secondary school age in 2005) continue on to secondary, implying that any further expansion of secondary schooling is likely to be constrained by a lack of primary school graduates. Over a half of all secondary non-starters and three quarters of all dropouts are from poor households. This reflects the significantly higher costs of secondary schooling compared to primary schooling in Bangladesh, as richer families make greater use of private tuition to facilitate progress through secondary school.

32. It is unclear why net enrolment figures between secondary and higher secondary differ so dramatically between gross and net enrolment (see Figure 5-1). However, it is possible that this is due to the fact that Bangladeshi households typically send their children to primary school later than the

officially starting age of 6 years – this may have more pronounced effects when combined with poor completion through to the secondary level. Those who do complete each level may well be doing so at later than official starting age, leading to significantly lower numbers in higher secondary net enrolment figures compared to gross enrolment.

33. *Overall education levels.* As a whole, the average years of education for individuals aged between 16 and 40 has increased by nearly a whole year (from 4.2 to 5.0 years) between 2000 and 2005, and completion rates have improved for all cohorts of children during this period (see Table 5-8). The improvement in education attainment among the adult population is consistent with the finding of chapter 3 that education among household heads has increased. Chapter 3 also indicates that the improvement in education "endowments" among household members has had a significant poverty-reducing impact. On average, moreover, the increase in women's education levels over the same period has been twice that of men (from 3.4 to 4.5 years of education). Nevertheless, differences in education levels between poor and non-poor have remained large and relatively stable since 2000 (3.7 years in 2000 to 3.8 years in 2005).

Table 5-8: Changes in the average years of education, 2000-2005

	2000			2005		
Age group	**male**	**female**	**total**	**male**	**female**	**total**
16 to 20	5.8	5.3	5.6	6.0	6.3	6.1
21 to 25	6.0	4.0	4.9	6.5	5.4	5.9
26 to 30	4.7	2.6	3.6	5.8	4.1	4.8
31 to 35	3.8	2.2	3.0	4.8	3.2	4.0
36 to 40	4.0	2.1	3.1	4.5	2.7	3.6
Poor	2.7	1.5	2.0	3.0	2.3	2.7
Non-poor	6.6	5.0	5.8	7.0	5.9	6.4
Total	**5.0**	**3.4**	**4.2**	**5.6**	**4.5**	**5.0**

Source: HIES (2000 and 2005)
Notes: There is no information in the HIES on the number of years of education completed for individuals that are not literate. To generate years of education these individuals are assumed to have zero years of education. Reported statistics include individuals that were still in school at the time of the survey and therefore have not completed their education.

34. *Cross-country comparisons.* Overall, Bangladesh compares relatively poorly to other developing countries and to other South Asian countries in terms of primary and secondary enrolment rates. In South Asia, only Pakistan had a lower enrolment rate in 2004 than Bangladesh, with an overall primary enrolment rate of 82 percent. Enrolment rates in tertiary institutions are also relatively low compared to developing country averages.

Public spending on education

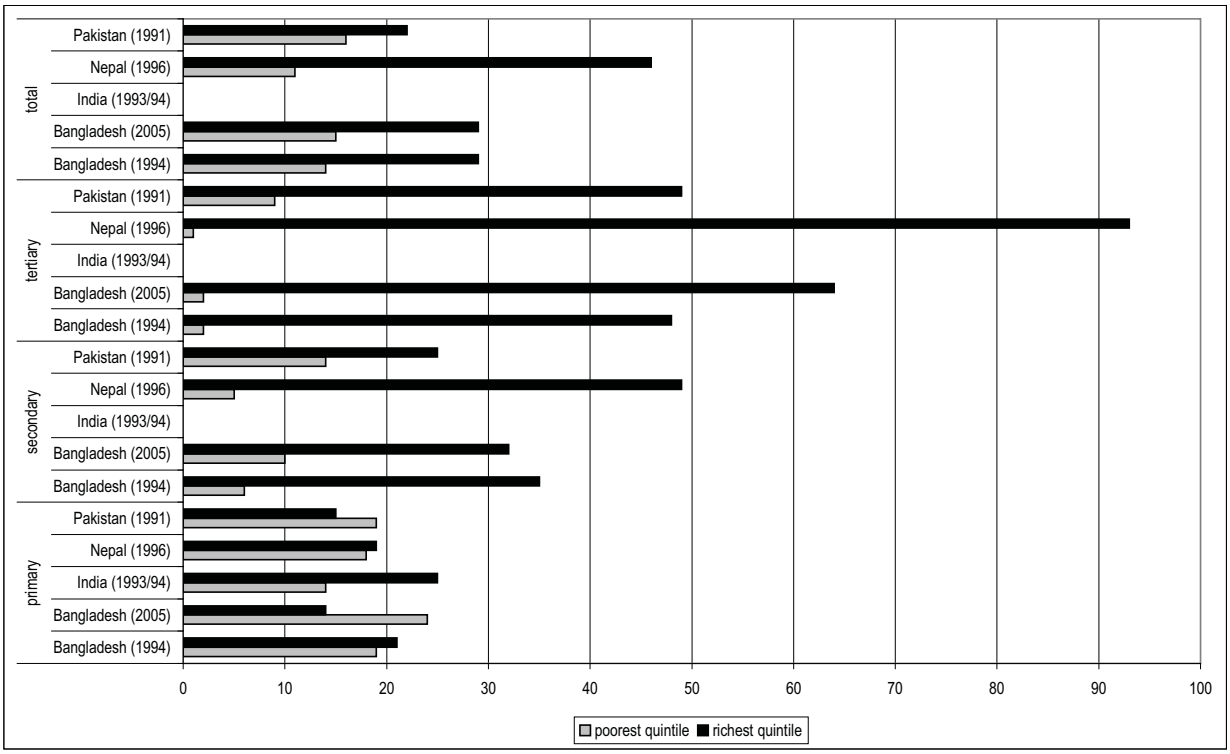
35. Average government per-student spending in 2005 for primary and secondary education was approximately $20 and $31 respectively. Government per-student spending at both levels is low compared to other countries in the region and countries at similar stages of development (see Figure 5-2 for comparisons of incidence of public education spending). For example, spending in India was approximately 3 times as high at the primary school level in 2002. These low levels of spending may be contributing to Bangladesh's high dropout and low completion rates.

36. Benefit incidence analysis shows that, overall, public recurrent education expenditure is not pro-poor. The bottom quintile represented 20 percent of school-going children and yet received only 15 percent of public recurrent education expenditure in 2005. Separation by level of schooling shows even more striking results from 2005, with the bottom quintile representing 27 percent of primary school-going children but receiving 24 percent of public recurrent education expenditures, 19 percent of secondary school-going children and receiving 12 percent, and 14 percent of higher secondary students and receiving only 3 percent.

37. Government spending on education in Bangladesh includes two significant social safety net programs. The primary school stipends program, introduced in 2003 (with predecessor programs initiated in 1994), is designed to provide stipends to poor students in rural schools and covered up to 40 percent of rural students attending government-supported schools in 2006. However, targeting occurs within schools

and therefore the poorest 40 percent of primary school students nationally would not necessarily be selected for the program. For example, the poorest 40 percent of students in a relatively affluent rural school may not contain any students defined as poor at the national level. Hence the primary stipend program may be poorly targeted.

Figure 5-2: Cross-country comparison of the incidence of public education spending



Source: Davoodi et al (2003)
Notes: Nepal tertiary and total figures only include university and no other tertiary. Nepal and India quintiles calculated at the individual level whereas Pakistan is at the household level.

38. The secondary school stipends scheme, initiated in 1994, is intended to provide eligible female students with tuition-free education as well as a small stipend. Its aim is to increase female access to secondary education, improve education quality and reduce fertility rates by delaying marriage. In 2005, 2.5 million female students were participating in the stipends program, with participation rates tending to be slightly higher for the poorest quintile (68 percent of the poorest quintile versus 63 percent of the wealthiest quintile participated among all of the students attending eligible schools in 2005). Given that the program is not poverty-targeted, this may simply reflect the greater reliance of poor students on the stipend compared to their wealthier counterparts.

39. *Public vs. private spending.* Average household spending on primary education is similar to levels of government spending at $20 per head for both in 2005, although differences between poor and non-poor students are very high. A similar pattern emerges at secondary and higher secondary although levels of spending are much higher and household education expenditure ($68 per head in 2005) tends to be much greater than government per-student spending ($31 per head in 2005). Large differences between the poor and non-poor in private spending likely contribute to gaps in education outcomes between poor and non-poor students.

40. High private expenditures, particularly for secondary and higher levels of education, are consistent with an increasing role of private education services. While the use of private education services was

lower for the poor than for the general population in a 2006 national survey on perceptions of governance (conducted by Power and Participation Research Centre or PPRC), as many as 34 percent of the poor reported such interaction. The substantial use of private services in education survey reveals aspirations for higher quality education from private providers or a demand for private tutoring, both of which seem to indicate that public education is perceived to be of low quality (Box 5.1).

Box 5.1: Education and health service perceptions among the poor

Exploring the perspectives of the poor on education opportunities and health services can help ground larger policy discourse in everyday experiences. The Power and Participation Research Centre, a think-tank organization based in Bangladesh, undertook a national-level governance survey in 2006 that covered 1,072 respondents classified as poor according to occupational variables (out of a national sample of 4,530 respondents in total). The survey results show inequalities evident in both experiences and perceptions across a range of services. Eighty percent of poor respondents felt that education provided moderate to strong opportunities in achieving "desired life-goals", but a large share felt that public education was of poor quality. Increasingly households use whatever savings they can accumulate to finance private tutoring. Meanwhile, certain forms of harassment were a common experience among the poor for health services, most commonly in the form of "ill behavior" and "lack of ethics."

Source: Hossain Zillur Rahman (2007) "Poor and the Governance Process," Power and Participation Research Centre

Determinants of Educational Attainment

41. Analysis of *household factors contributing to educational attainment* since 2000 shows that income, levels of education, religious affiliation, characteristics of household heads, and geographic location all play important roles.

42. Data from the 2000 and 2005 Household Income and Expenditure Surveys reveal a number of factors contributing to educational attainment (see Annex 5, Table A-5.4). Household expenditure per capita – a proxy for household income – is found to have a positive impact on educational attainment although attainment appears to be relatively inelastic to expenditures. Interestingly, the income/expenditure impact appears to be slightly stronger for girls than for boys, suggesting that improvements in the household's economic status are likely to benefit girls more than boys.

43. *Age* also appears to be a significant factor, with younger cohorts more likely to have higher educational attainment than older cohorts due to the educational expansion of the 1990s. *Gender* continues to be an important determinant of attainment, with women tending to have higher attainment than men, although the magnitude of this effect is small.

44. *Education of the household head and partner* has positive and statistically significant effects on attainment. Attainment is higher in households where the head is female, but preferences in female-headed households strongly favor male household members. A boy living in a female-headed household is 7 percentage points more likely to go beyond secondary schooling compared to a boy living in a male-headed household (as opposed to 3 percentage points among girls in the same scenario). This greater male preference in female-headed households may be due to a greater need for these households to have a well-educated male to provide access to markets and social services. The *overall number of children* in the household tends to have a negative impact on educational attainment as well, likely due to smaller resources available to invest in the education of each child in a larger family.

45. Individuals residing in *areas with more secondary* schools have a higher probability of continuing to secondary, but the supply of secondary schools appears only to be statistically significant for boys' attainment. This more serious supply constraint for boys may arise from the strong incentives given to schools for enrolling girls through the nationwide government stipends programs for eligible girls at the

secondary level. Additionally, *division dummies* were found to have significant effects. These are discussed in greater detail below.

Regional variations in educational attainment

46. Regional differences are evident in enrolment rates. However, just like health outcomes, enrolment rates do not mirror regional patterns in consumption poverty (see Figure 5-3 and Figure 5-4). Despite the positive correlation between household expenditures and educational attainment, this relationship is not evident at an aggregated, divisional level. Khulna and Barisal divisions, in spite of being the poorest, have higher primary enrollment rates among both boys and girls than Dhaka, Chittagong and Sylhet. Along with the best health outcomes (as seen above), Khulna also has the highest enrolment rates at both primary and secondary level in 2005. Patterns in secondary school enrolment may be partially explained by differences in the incidence of secondary schools across areas, as suggested by the regression results cited earlier – for instance, the number of secondary school age children per secondary school in Khulna is 717 compared to 1,352 in Sylhet, which has the lowest secondary enrollment rate.

47. The coefficients of division dummies in the regressions of school attainment are broadly consistent with the regional patterns in enrollment seen above. After controlling for household level determinants of school attainment, households in Dhaka division are likely to have lower education attainment relative to all other divisions except for Sylhet; while the positive location effect is the highest for Khulna, Barisal and Rajshahi in that order (see Annex 5, Table A-5.4). Thus it appears that when the effects of household attributes on school attainment are netted out, being located in an economically lagging division has a positive effect on education outcomes.

48. The strong negative effect for Sylhet appears to be a primarily female phenomenon – girls were 8 percent less likely to go to school in Sylhet than girls in Dhaka division in 2005. Gender gaps in enrolment rates have historically been high in Sylhet, with the male primary gross enrolment rate at 15 percentage points higher than the female rate of 76 percent in 2000 (countrywide female primary gross enrolment was 93 percent in the same year). Gender gaps in primary and secondary education have narrowed substantially in Sylhet since 2000, to the extent that gross primary enrollment among females have surpassed that among males in 2005 (see Figure 5-3).

Figure 5-3: Gross primary enrolment (2005)

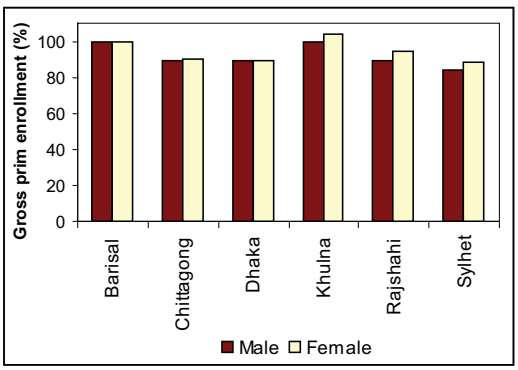
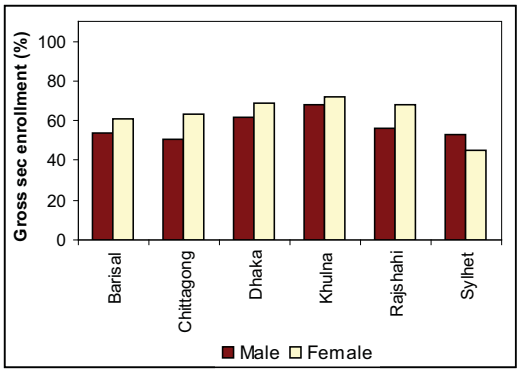


Figure 5-4: Gross secondary enrolment (2005)



Source: Al-Samarrai (2007) using HIES (2005)

49. The fact that economic opportunities in a region do not cast a positive influence on education outcomes is somewhat of puzzle, and especially so given that returns to endowments including education are *lower* in lagging regions, which should dampen the demand for education (see chapter 4). More complex phenomena may however be at work: for example, the ability to migrate from a lagging region is linked to better human (and physical) endowments (see chapter 4), which can serve as an incentive for staying in school. Conversely, the greater labor market opportunities in the more vibrant Dhaka and

Chittagong divisions may translate into a greater demand for child labor, which would raise the opportunity cost of attending school, particularly for poorer households.

50. Other factors that could explain the paradox include arguments similar to what were offered (in section I) in the context of regional patterns in health outcomes. These include the greater concentration and longer presence of NGOs in the economically lagging regions and the impact of their awareness-raising activities on social outcomes; positive spillover effects on non-NGO members in the same community; and differences in historical social norms, particularly as it relates to the empowerment and mobility of women. The last factor is likely to be particularly relevant for Sylhet, as mentioned earlier in the context of health outcomes in section I. Given that the HIES data do not allow a close examination of these questions, more detailed analysis using alternate data sources will be necessary to explain this apparent paradox between the spatial patterns of income poverty and human development.

III. Concluding remarks: policy implications

51. Bangladesh has seen substantial improvements in both health and education outcomes, but inequalities continue to pose significant challenges. Moreover, malnutrition rates remain high by international standards, even compared to countries with similar levels of per capita income, and hold back improvements in health outcomes, particularly in child and maternal mortality rates. The recent rise in food prices, and the switch to lower quality food and lower intake, is likely to have worsened this problem. The rich-poor gaps in health outcomes and utilization of primary care services have either remained unchanged or widened between 1996-1997 and 2004, the period before and after a shift in health, nutrition, and population sector policy in 1998. Gender gaps among the poor are also evident, most notably in immunization coverage and in provider choice for treatment of childhood illnesses. These inequalities suggest a wide scope for demand-side interventions in reaching the poor, as is being considered under the current health strategy.

52. Services delivered through household or community outreach show the smallest rich-poor gaps in areas such as contraceptive use, tetanus toxoid for pregnant mothers, vitamin A supplementation of children, and use of ORS among children experiencing diarrhea. As health outreach efforts successfully raise demand for health services and change households' preferences towards utilizing these services, however, service delivery may successfully move away from a doorstep delivery model to clinic-centered services. Services that currently show some of the widest rich-poor gap are those that require visits to clinics or medical providers and out-of-pocket expenditures, such as antenatal care, delivery by medically trained provider, postnatal care and curative care for children. If costs are the biggest constraint to poor households' use of services, vouchers may be effective in increasing utilization by the poor.

53. Conditional Cash Transfer or CCT programs, another type of demand-side intervention, may also provide incentives for households to seek care. These provide cash transfers to poor families, conditional on their use of preventive and curative health services, school enrollment, and nutrition supplementation. Evaluations of CCTs implemented in Latin America show that such programs effectively increase utilization of health services among poor households.

54. Another approach in a country like Bangladesh, where wide division-level variations in health outcomes are evident, is geographic targeting of health expenditures so that resources can be directed to areas most in need. Poverty maps and nutrition maps can provide indicators of poverty and/or under-nutrition for districts or even villages and thus can be used to fine-tune the allocation and effectiveness of expenditures.

55. In education, primary gross enrolment rates have stagnated since 2000, although there have been improvements in net rates. Enrolment rates amongst the poorest boys have not kept pace with rates for

boys in less poor households. Given the strong positive relationship between poverty and education, this is a disturbing trend. Emphasis should be placed on this group if poverty and education MDGs are to be achieved. Primary school completion rates since 2000 have improved, with female completion rates seeing the most significant increase. These increases were largely driven by a rise in enrolment rates in the 1990s, but given the stagnation of primary school enrolment, further increases in completion will need to come about through improvements in student retention.

56. In addition, secondary level education has seen substantial growth in enrolment but a slight decline in completion, resulting in a growing proportion of secondary level dropouts. This is particularly true of the poor. This may be due to relatively low government spending per-student in Bangladesh compared to other countries, leading to poor quality of schooling. Moreover, the incidence of public education expenditure is not, on the whole, pro-poor. This combined with differential household expenditures, result in wide gaps between spending on poor and non-poor students. Differences in household spending are largely explained by higher levels of spending on private tuition amongst non-poor households, which is most striking at the secondary level. The current stagnation in primary enrolment rates and high numbers of secondary school dropouts (despite gains in secondary school enrolment) suggest that focusing on children's progression through the school system would be most effective in increasing completion rates.

57. A focus on skills development or vocational education is essential to enhance the quality of the labor force in Bangladesh and mitigate the impact of dropouts from secondary education. The main challenge would be to overcome the inadequate orientation of the current skills development system to the labor market. A recent World Bank study (World Bank, 2006b) finds that formal providers of technical and vocational education and training do not have strong linkages with the private sector employers who drive the changing patterns of labor demand, which would be necessary to ensure that skill development courses are relevant and useful to trainees and employers alike.[9]

58. As with health, findings at the divisional level appear to contradict the negative associations between poverty and educational attainment seen at the individual level, possibly due to the fact that labor market opportunities are higher in wealthier divisions that have more economic opportunities. This is most extreme in Chittagong, which exhibited one of the largest declines in the incidence of poverty despite a fall in primary enrolment rates. Future policy options should address the sources of these division-level variations, which may be related to the effects of NGO presence or local socio-cultural factors.

[9] The World Bank (2006b) study interviewed over 2300 graduates of Vocational Education and Training (VET) institutions. Less than 10 percent of individuals who graduated in 2003 from VET institutions were employed two years later. Close to half of the employed graduates took at least a year to find a job and rates of return for graduates seem to be below those for graduates from the general education system.

6. Are the Poor Protected? Vulnerability and the Role of Safety Nets

1. As seen in Chapter 1, the percentage of Bangladeshis living in poverty (consumption below the upper poverty line) fell from 57 percent in 1991-1992 to 49 percent in 2000 and 40 percent in 2005. The percentage of population in extreme poverty (consumption below the lower poverty line) fell from 50 percent in 1991-1992 to 25 percent in 2005; between 2000 and 2005, the number of people in extreme poverty fell by 8.3 million. However, around 56 million Bangladeshis were still living in poverty in 2005, including 35 million who were in extreme poverty.

2. Previous chapters have shown that much of the poverty reduction achieved so far in Bangladesh is linked to higher and more stable economic growth during the past 15 years and especially during the period 2000-2005, which has raised the returns to household endowments including labor. Other factors, like a rapid expansion of microfinance and substantial improvements in human development have also played their part by improving the income-generating capacity of the poor. Improving and sustaining economic growth is clearly a necessary condition for Bangladesh to reduce poverty further and attain the MDG target of halving poverty from the 1990 levels. At the same time programs that involve direct transfer of resources to the poor also have an important role to play in ensuring that the poor are able to meet their basic needs, cope with the impact of economic shocks, and invest in human development to be able benefit from and participate in the growth process.

3. Social safety net programs are important ways to effect such transfers, where the primary objectives are to reduce the deprivations associated with deep poverty *and* mitigate the risk of households falling into (or further into) poverty as a result of a shock – whether at the household or community level. Shocks can affect all sections of the population, but typically leave the most damaging impact on the poor – in the form of severe deprivation in the short run and, in many cases, lasting harm to their economic prospects that increases the likelihood of chronic poverty. By mitigating the impact of shocks, well-functioning safety nets reduce short-term vulnerability as well as improve long-term growth prospects among the poor – by reducing the compulsion among households to adopt coping strategies in the aftermath of a shock that leads to loss of human and physical capital and income-generating capacity. With these benefits in mind, the Government of Bangladesh has instituted a number of safety net programs to provide cash and in-kind transfers to the poor, with expenditures on these programs growing steadily since the mid-1990s.

4. Given the importance of safety nets in promoting equity and fostering inclusive growth, this chapter reviews these programs, in the context of the nature and pattern of shocks and vulnerability to these shocks. Section I below discusses available evidence on the incidence of and vulnerability to shocks, its correlates and patterns, drawing from recent research based on panel data. Section II discusses key findings on safety net programs, drawing primarily from HIES 2005 that concluded a special module on targeting and coverage of safety net programs and administrative data on programs. Section III concludes the chapter, along with recommendations that are informed by the analysis.

I. Nature of shocks and vulnerability in Bangladesh

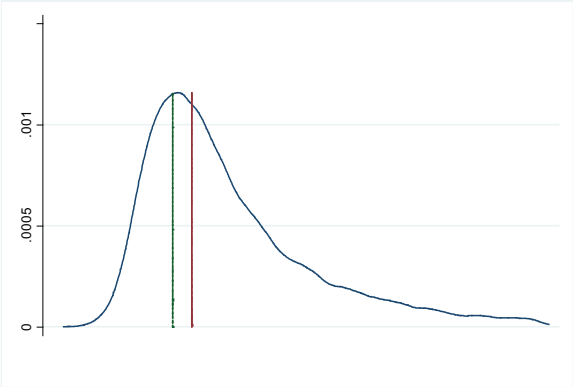
The vulnerable population: estimates from HIES and recent events

5. The size of the vulnerable population – at the risk of falling into or deeper into poverty – is large in Bangladesh. This is even suggested by cross-section data like HIES 2005, which cannot show movements in and out of poverty over time. A high concentration of consumption expenditures around poverty lines (Figure 6-1) implies that shocks can cause large movements in poverty rates. The relative positions of the upper and lower poverty lines and the density curve also suggest a large population

consuming between the upper and lower poverty line levels, which implies that even a small shock can send a large number of individuals, many of whom are already poor, into extreme deprivation.

6. Simulations with HIES 2005 confirm these perceptions (Table 6-1). A 5 percent shock to consumption, distributed equally throughout the population, would increase the share of population below the lower and upper poverty lines by 11 and 16 percent respectively, raising the number of poor and extreme poor by 6.3 and 5.7 million respectively. Even a 2 percent shock to consumption would raise extreme poverty rate by 6 percent. Moreover, most large shocks do not affect the consumption of everyone equally. Thus the actual welfare and distributional impacts may be quite different from what these simulations suggest.

Figure 6-1: How consumption is distributed (2005)



Source: HIES (2005)

7. Even the rough simulations suggest that shocks, like those that occurred in 2007, are likely to have significant poverty impact at least in the short-run. The aggregate impact of the floods of July-September and Cyclone Sidr in November of that year is estimated to be around 1 percent of GDP. Projections based on the elasticities shown in Chapter 1 suggest that the loss in GDP growth would have lowered the annual rate of poverty reduction in 2007 by around 0.7 percentage points.

8. The impact of the natural disasters has been exacerbated by shocks due to steep rises in commodity prices, notably fuel and food prices. While the full impact of rising international prices is not faced by the Bangladeshi consumer, the rise in the global price of rice and edible oils in particular has contributed to food price inflation rising to 14 percent in early 2008. Given the larger share of food in the budget of the poor, rising food inflation can have a disproportionate impact on the poorest, which would not be reflected in the calculations in Table 6-1. An illustrative example is provided by the recent spike in the price of rice below.

Table 6-1: Poverty impact of shocks
simulations using HIES 2005

Shock to consumption*	% increase in poverty HCR	% increase in extreme poverty HCR	Increase in # poor	Increase in # extreme poor
2%	4.7	6.3	2,613,200	2,196,200
5%	11.4	16.2	6,310,600	5,657,300
7%	15.7	23.3	8,715,300	8,145,400

Source: HIES (2005)
*Note:**: A "shock" of x% assumes x% in reduction in consumption for the *entire* population.

The impact of recent rice price increases

9. Retail prices of rice increased by around 38.8 percent in rural areas and 36.8 percent in urban areas of Bangladesh from April 2007 to March 2008, which would have had a substantial short-run welfare impact, since rice accounts for around 24 percent of total expenditure of an average Bangladeshi household (and about a third for poor households). The nature of impact also depends on the distribution of net buyers and sellers of rice in the population and how responsive wages are to price increases.

10. **Results from simulations based on HIES 2005.** Simulations with survey data suggest the food price shock has a significantly adverse impact on welfare, given that only 17 percent of Bangladesh households are net sellers of rice and wages for most workers (including daily wage labor and manufacturing sector workers) are unlikely to keep up with rapid price increases. Assuming no wage increase, the 38.8 percent rural and 36.8 percent urban increase in rice prices would lead to a 5 percent real income loss for the average household and 11 percent for those in the bottom quintile. Nominal wages would have to increase by an average of 14 percent (20 percent for the bottom quintile) to leave the

welfare level unchanged after the rice price increase. If wages adjust partially (a 5 percent increase for everyone), average real income would decline by around 3 percent for the population and 8 percent for the bottom quintile (see Box 6.1).

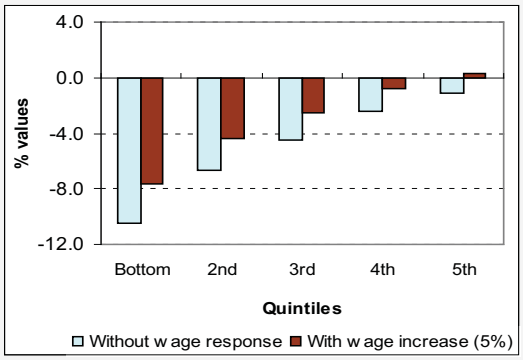
11. The impact is also unevenly distributed among different groups – larger for urban than rural households and for poor than nonpoor households (Box 6.1). Households more likely to suffer include those headed by daily wage workers and functionally landless, while the only groups that benefit are households headed by farmers and/or owning more than 1.5 acres of cultivable land. The results translate into significant poverty impact – about 3 percentage points with a 5 percent nominal wage increase – with the *2005 poverty rates as the baseline*. The estimated increase in extreme poverty rate is higher, implying that the poorest households bear the biggest brunt of the impact – which suggests the critical need for safety nets for such households in the face of price shocks. Taking into account the reduction in poverty that would have occurred between 2005 and 2008 due to the strong and stable GDP growth (6 percent annually or more) during this period, the simulations suggest that the food price shock would have eroded some (but not all) of the gains in poverty reduction since 2005 (see Box 6.1).

Box 6.1: Impact of rising rice prices on household welfare in Bangladesh

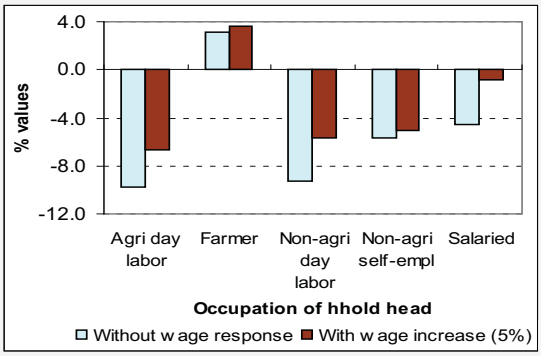
Simulations using HIES 2005. The welfare impact of the 39 and 37 percent increase in rural and urban rice prices, respectively, is simulated *with* and *without* wage response, based on an approach developed by Deaton (1989, 1997). For wage responses, nominal wages are assumed to *rise by 5 percent for all households* – on the basis of the recent history of wage increases from BBS data. Important caveats to the analysis are that it does not take into account: *(i)* substitution for rice in the consumption basket; *(ii)* price rises for other consumption items; and *(iii)* the welfare impact of government programs to mitigate the rice price shock. Only 6 percent of urban households, 22 percent of rural households and less than 15 percent of the bottom two quintile households are net sellers of rice. The rice price increase is estimated to have an average negative impact of 5 percent overall and 11 percent for the bottom quintile on real household expenditures or income, assuming no change in nominal wages. The impact is larger for urban than rural households and for poor than nonpoor households (Figure A). Among occupation groups, only households headed by farmers (24 percent of all households) benefit, while daily wage workers are affected most severely (Figure A). Disaggregating by land ownership, rural households with less than 1.5 acres of cultivable land are affected adversely. If wages had increased by 5 percent for everyone, average real income would decline by around 3 percent for the population and 8 percent for the bottom quintile.

Figure A: Impact on real expenditure (income) for different groups

(a) by quintiles of per capita expenditures



(b) by occupation of household head

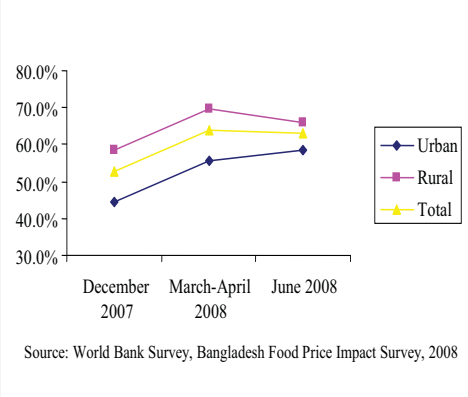


Source: HIES (2005); for details on the model and results see Annex 6, Section I.

The impact on poverty rate, with the 2005 poverty rate as the baseline, is an increase of around 3 and 5 *percentage points*, *with* and *without* wage adjustment respectively. The estimated increase in extreme poverty rate is around 4 percentage points (*with* wage increase), implying that poorest households suffer most severely. But these estimates *do not imply* that the poverty headcount rate in 2008 is 3-5 percentage points higher than that in 2005, since that does not take into account the poverty *reduction* between 2005 and 2008 due to economic growth. During 2005-2008, when GDP growth averaged at least 6 percent annually, the elasticity estimates in chapter 1 suggest that poverty would have fallen by about 5 percentage points. Thus the *net* impact on poverty rate taking into account GDP growth *and* the food price shock would be roughly a decline of 2 percentage points from 2005 to 2008 i.e. from 40 percent to 38 percent. This suggests that the food price shock would have negated *all* the poverty reduction since 2005 only in the *unlikely* event that nominal wages did not increase at all between April 2007 and March 2008.

Insights from the rapid survey of 2008. That the food price shock significantly reduced household welfare is also supported by the survey conducted by the World Bank (July, 2008) to assess the short-term impact of the food price shock. Unlike HIES, this survey uses largely qualitative and thus easily collected indictors of household welfare. The consumption patterns reported in this survey suggest that the proportion of households who skipped a (or had an insufficient) meal at least once a month rose from 53 percent in December 2007 to 64 percent in March 2008 (Figure B). While some of the increase in deprivation can be attributed to seasonality, the fact that the situation in June (post Boro harvest) remained more or less unchanged from March to April, suggests that the food price shock had an impact stretching well beyond the stress expected during the pre-harvest season.

Figure B: % of households skipping meals or eating insufficient meal at least once a month



12. Because of the skewed nature of the impact, inequality would also increase due to the rice price shock. The rise in rice prices appears to have been stabilized by May/June 2008 by the "bumper" *Boro* rice harvest; but the new equilibrium price is likely to stay above the old equilibrium price, so that the welfare impact are likely to persist in the near future.

13. **Insights from a rapid survey.** A survey of 2,000 households conducted by the World Bank in July 2008 focusing on the impacts of the food price rises finds evidence consistent with results of the simulations discussed above.[1] More than 95 percent of survey households reported to have been adversely affected by the price increase, and the number of households suffering from a shortage of food has increased substantially (see Box 6.1). The impact was felt particularly acutely by day laborers, and landless and marginally landless households. Households reported their wages or salaries lagging behind food price increases, leading to a decline in real income for most. The survey also suggests that the adversity that peaked in March-April 2008 persisted through June even as prices stabilized after the *Boro* rice harvest.

14. The survey offered important insights into how households have responded to the shock. More than 75 percent of households had to cut back on their food intake and nearly 90 percent of households lowered the *quality* of food they consumed and/or reduced nonfood expenditures (Table 6-2). Reduced food intake may have also exacerbated the high rates of child malnutrition that exist in Bangladesh even in normal times (see chapter 5), which can in turn have irreversible health consequences for affected children in the years to come. A recent

Table 6-2: Household responses to the food price shock (%)

	Urban	Rural	Total
Switch to lower quality food	87	88	88
Reduce nonfood expenditures	86	87	86
Reduce quantity of food intake	72	78	76
Take out loans	46	60	55
Spend savings/sell/pawn belongings	44	47	45
Decrease education expenses*	33	43	39
Work more / increase production	25	40	34
Take children out of school*	7	9	8
Assistance from community members	1	9	6
Stop loan payment	3	6	5

*: % of households with school going children
Source: World Bank Food Price Impact Rapid Survey (July, 2008)

[1] The survey sample comprised of 2,000 households, including 1,200 rural and 800 urban households. The sample was designed to ensure that the data captured a wide spectrum of the Bangladeshi society. The rural survey was conducted in all six divisions in the country, and included 12 districts. The urban survey was fielded in six districts in four divisions of the country.

global assessment suggests that an additional 44 million individuals worldwide will be undernourished in 2008 alone due to the rise in food prices (World Bank, 2008e).

15. Significant numbers of households reported taking out new loans, dipping into household savings, selling or pawning belongings and working more hours. Some of the measures households were compelled to adopt may have adverse consequences for the human capital of future generations. More than a third of households with school-going children report reducing education-related expenditures, and nearly 8 percent of such households took their children out of school. The extent this matters depends on the length of time a child is taken out of school – the longer the period the greater the risks to the child's development and Bangladesh's human capital formation.

16. The rice price rise is not the only global shock affecting Bangladesh; the rising price of oil is a potentially significant source of risk as well. The Bangladeshi consumer is largely insulated from fluctuations in international oil prices by administered domestic prices supported by large subsidies (particularly for kerosene, diesel, and fertilizers). The direct impact of fuel price rise on household real income is much less than that of a rice price rise – expenditure on kerosene accounts for around 1 percent of household expenditure (less than 2 percent for the rural poor who are the largest users), while transport costs account for 2-3 percent. Preliminary analysis also suggests that the direct impact of fuel and fertilizer price rises on agricultural production costs of farmers is likely to be small.[2] That said, if the price rise is significant for fuel and fertilizers, it will be an additional source of hardship for the poor who already face the considerable impact of rice price increases.

Insights on shocks and vulnerability from a longitudinal study in rural Bangladesh

17. What are the major sources of vulnerability and transitions in and out of poverty in Bangladesh? And related to that, what factors determine the extent to which households are vulnerable to shocks? A background paper for this report using a longitudinal dataset from Bangladesh lends some insights into these questions, by analyzing the patterns and causes of dynamic movements in and out of poverty (Quisumbing, 2007). The study involved re-surveying a sample of households in 102 villages located in 14 districts who were interviewed as part of a number of different surveys between 1994 and 2000. The most recent follow-up survey, conducted in 2006-2007, was on a sample of 1,787 core households from the original survey along with 365 households who were "splits" from the original household. The survey was complemented by a qualitative study to examine perceptions of changes on a sub-sample of the survey communities (see Annex 6, Section II for more details).

18. **Incidence of shocks by type.** In the survey, shocks are defined as adverse events that lead to a loss of household income, a reduction in consumption, a loss of productive assets, and/or serious concern/anxiety about household welfare. Shocks are classified into a number of broad categories: agro-climatic, economic, political/social/legal, crime, health, and life-cycle related (Annex 6, Section II).

19. More than half of all households had been affected by shocks in the last 10 years prior to the survey (1997-2006/07). The most frequently reported shocks for all households are *illness shocks* (expenses related to illness and/or foregone income), *dowry and wedding-related expenses*, and *floods* (see Annex 6, Table A-6.1). Illness shocks account for at least 22 percent of most commonly reported shocks with expenses related to illness perceived as more detrimental to household welfare than income losses. Dowry and wedding-related expenses account for 16-23 percent of reported shocks while flood-related shocks accounts for 13 percent of reported shocks in all sites. The relative frequencies with which

[2] The ratio of agricultural expenses on irrigation, fuel, and fertilizers to total household expenditures is less than 5 percent for all expenditure quintiles.

different types of shocks occur are broadly consistent with the insights from the focus group discussions (FGDs) conducted in a sub-sample of survey communities (Davis, 2006).[3]

20. **Impact of shocks on consumption***:* Illness-related income losses and death of a household member appear to have the most unambiguously adverse impact on consumption. Shocks can also have different impacts on households, depending on their initial characteristics. For example, in certain villages, livestock deaths and division of property have a significant adverse impact on household consumption when the head has less than four years of schooling, but not otherwise. In others, dowry and wedding expenses have a greater negative impact when the household's land ownership is lower than the median landholding. These suggest that households with lower endowments – in terms of education, land ownership, or asset ownership – are likely to be more vulnerable to certain types of shocks.

21. This analysis of movements in and out of poverty suggests the following. *First*, schooling of household head and ownership of assets including land, besides being important determinants of consumption, also influences the impact of shocks on household consumption – in other words, the extent of vulnerability of households to specific shocks. *Second*, illness shocks – in particular, the income foregone when an income earner falls ill – are frequent and tend to have serious adverse impacts on household consumption. *Third*, two key demographic categories – children below age 15 and males and females above 55 – turn out to be significant, pointing to the importance of life-cycle and demographic factors in creating and transmitting poverty. *Fourth*, preliminary evidence suggests that dowry expenses represent a substantial drain on household resources, which is also consistent with the findings from the qualitative work. *Lastly*, unobservable community effects are consistently significant, pointing to the important role of locality-specific factors in affecting movements of households in and out of poverty. These factors are similar to those identified earlier as determinants of poverty status in 2005.

Community-wide shocks – floods, cyclones, and seasonal deprivation

22. Bangladesh is one of the most vulnerable countries in the world to natural disasters including floods, droughts, and cyclones (see Box 6.2). Much of the vulnerability has to do with Bangladesh's geography and location. Eighty percent of the country consists of floodplains created by more than 300 rivers and channels, including three major rivers: the Ganges, the Brahmaputra, and the Meghna. The southern part of the country is also particularly vulnerable to cyclones (see chapter 4). In 2007, as mentioned above, the country was stricken by serious floods and a cyclone whose combined impact on the economy was severe (Box 6.2).

23. Serious community-wide shocks, particularly when they occur repeatedly, increase the likelihood of poverty traps in affected areas due to several reasons. Severe shocks often compel the vulnerable to cope with immediate needs by selling remaining productive assets, accumulating high-interest loans, and removing children from school, all of which adversely affect their long-term economic potential. As seen in chapter 4, the areas in Bangladesh at a high risk of natural disasters (particularly a cyclone) are also more likely to be poor and have lower access to markets and infrastructure. These conditions tend to exacerbate the impact of a natural disaster and contribute to poverty traps, which would in turn prolong the recovery from a disaster and sustain chronic poverty in the long run.

24. Another form of shock that occurs with nearly predictable regularity is to do with seasonality in agriculture. Large areas in the northwest are subject to a phenomenon called *Monga* – a form of deprivation during the lean agricultural season in October and November – causing enormous suffering every year and inducing high chronic poverty. An estimated 5 million extreme poor live in the *Monga-*

[3] Fifty percent of all focus groups listed dowry as responsible for household decline or remaining in poverty, followed closely by illness or injury (48 percent). Flooding, however, was mentioned less frequently (25 percent).

affected districts of Rangpur, Gaibandha, Kurigram, Lalmonirhat and Nilphamari where agriculture is the mainstay of local economies (see Box 6.2).

II. Addressing poverty and vulnerability through transfers: public safety net programs

25. The sizes of the extreme poor population and the vulnerable population in Bangladesh, the high incidence of shocks including community-wide shocks, and the adverse impact of shocks on the likelihood of poverty (see section I above) all add up to a compelling case for safety nets to be a critical priority area for public policy. Other than addressing the key objective of reducing short-term deprivation, safety nets also improve long-term economic prospects of households when they function well and flexibly respond to community-wide shocks. With safety nets addressing their basic needs in the aftermath of a shock, households would be less likely to take decisions – such as taking children out of school or selling off productive assets like livestock – that increase the likelihood of chronic poverty in the long run.

Box 6.2: Bangladesh's vulnerability to natural disasters and seasonal shocks

Vulnerability to natural disasters. Eighty percent of Bangladesh consists of floodplains created by more than 300 rivers and channels, including three major rivers: the Ganges, the Brahmaputra, and the Meghna. Regular annual flooding has traditionally been beneficial to agriculture; but severe floods occurring less frequently have had adverse impacts on residents and the economy. In the last two decades, major floods occurred in 1988, 1998, 2004, and most recently in 2007 – affecting an estimated 11 million (2007) to 68 million (1998) people. The southern part of the country is also particularly vulnerable to cyclones – with a 710 km long coastal belt and an area of about 37,000 sq. km. Major cyclones have occurred in 1970, 1985, 1991, and 2007, affecting an estimated 1.8 million (1985) to 10 million (1991) people. More than 500,000 deaths were reported due to the 1970 cyclone and its aftermath, while the 1991 cyclone caused 138,000 deaths.

Climate models indicate that, by 2050, Bangladesh will experience increasing temperatures and monsoon precipitation, intensified cyclones, more severe droughts, and river bank erosion. Additionally, a simultaneous rise in the sea level may alter the sediment balance and salinity in coastal areas. Potential effects of climate change on poverty are substantial, affecting natural resources and common property resources such as fisheries, mangroves, and forests, which provide livelihood support for the poor. Furthermore, disasters such as catastrophic floods generate shocks to household savings and consumption and exacerbate food insecurity, water stress, and health problems. Flood-prone districts of Bangladesh, for example, have consistently greater poverty ratios, suggesting a geographic poverty trap.

2007: the year of natural disasters. An unusually severe monsoon flooded Bangladesh along with neighboring countries in 2007. By end-July, the floods were affecting 39 of the country's 64 districts, including almost half of the total land area of the Dhaka and Sylhet divisions, and a quarter of Rajshahi division. Preliminary and incomplete figures indicate an estimated 11 million people affected, with damages to 1 million homes, 1.1 million hectares of crops, and more than 23,000 kilometers of roads. Just as Bangladesh was beginning to recover from the floods, a Category 4 tropical cyclone (Cyclone Sidr) struck its southern coastline on November 15, 2007. With a radius of 74 kilometers and wind speeds reaching 223 kilometers/hour, it killed nearly 4,000 people and affected the lives of about 8.7 million people in 30 out of the 64 districts in the country. While the country's cyclone-preparedness program, including advance warnings systems, awareness-building, and shelter availability prevented the death toll from reaching the levels seen during earlier cyclones, economic losses were extensive, including destruction or damage to standing rice crops, fisheries (particularly shrimp farms), forestry, livestock, housing, rural roads, and embankments.

Severe seasonal deprivation (Monga). The greater Rangpur districts in the Northwestern region experience seasonal deprivation and a famine-like situation, locally known as *Monga*, with disturbing regularity. *Monga* occurs during mid-September to mid-November, corresponding to the post-planting and pre-harvesting of the major *Amon* rice crop. Households primarily reliant on agricultural wages find their pre-harvest purchasing power dropping drastically due to a rise in prices of food staples coupled with a fall in local labor demand and wages. Although other parts of rural Bangladesh also experience price rises and wage drops during the same season, their extent and acute consequences leading to hunger and famine appear quite unique to Rangpur. Roughly 7 percent of the total

population in Bangladesh (about 9.6 million people) inhabits these districts, about 5.3 million of them living below the poverty line. The suffering during *Monga* thus is not limited to a small pocket of households. Furthermore, *Monga*-like phenomena are observed in certain pockets in other parts of the country as well, for example in *Char* areas (reclaimed land from silted up rivers) in Bogra and Jamalpur districts.

26. Natural disasters cause immediate deprivation by wiping out livelihoods, due to the immense loss of private assets – housing stock, durable household goods, and livestock – and disruption of the local economy. Borrowing from informal sources often insulates the poor in the immediate aftermath of natural disasters but risks leaving them highly indebted.[4] Social protection programs like cash grants and food aid can be highly beneficial in this context, by reducing the need for coping strategies that lead to long-term poverty traps.

27. Bangladesh has a wide spectrum of social safety net programs, including both cash and in-kind (or food) programs. The composition of programs is a mix of conditional and unconditional cash and food programs, subsidies and targeted funds. Public safety net programs are focused on rural areas, with little coverage of the urban poor. However, during the recent rise in food prices, the Government set up subsidized rice distribution outlets, including in urban centers. Self-targeting methods were used to screen out non-poor households through a combination of rationing, queuing, and the provision of coarse rice.

Financing trends and composition of public safety net programs

28. Total public spending on social safety net programs was less than 1 percent of GDP till the late 1990s, but increased to 1.6 percent in the allocations for 2007/08. A dominant share of safety net resources are spent on unconditional programs, out of which in-kind (food) transfers constitute the largest part. Expenditure allocations for food transfers programs are much higher than that for cash transfer programs, for both conditional and unconditional programs. In 2007-08, Vulnerable Group Feeding (VGF) was the single largest program with the highest allocation (see Table 6-3) and 5 million beneficiaries. The second and third largest programs, both in terms of expenditures and number of beneficiaries, are the Old Age Allowance and the Vulnerable Group Development (VGD) programs. Over time, the government has increasingly shifted resources away from food programs towards cash transfer programs. For example, the Food-For-Education program (FFE) has been discontinued and replaced by Cash-For-Education, and Cash-For-Work is gradually replacing the Food-For-Work (FFW) program (Table 6-3).

Table 6-3: Financial allocations for major social safety net programs (millions of Taka in real terms)

Program	*1999-00*	*2000-01*	*01-02*	*02-03*	*03-04*	*04-05*	*05-06*	*06-07*	*07-08*
Food for Work (FFW)	8060	8682	6728	4123	2047	4040	2197	2638	2609
Gratuitous Relief (GR) & Test Relief (TR)	2280	2315	2319	2201	1896	1623	2687	2602	3019
Vulnerable Group Development (VGD)	2720	1952	2367	1865	1751	1736	2447	2580	2859
Vulnerable Group Feeding (VGF)	2290	2914	1250	992	1490	811	1883	3040	5643
Allowance for Widow	250	245	239	370	777	964	1022	1102	1522
Honorarium for Freedom Fighters	150	147	275	263	155	175	318	424	503
Old Age Allowance	490	490	477	686	1555	2109	2385	2712	3136
Primary Education Stipend Project (PESP)	0	1099	954	5485	3749	4219	3356	3305	3270

Source: Various sources. 1999-00 base year
Note: see Annex 6, Table C for a brief description of the objectives and other information on each program.

[4] See Dasgupta (2007).

Program coverage, efficiency, and targeting

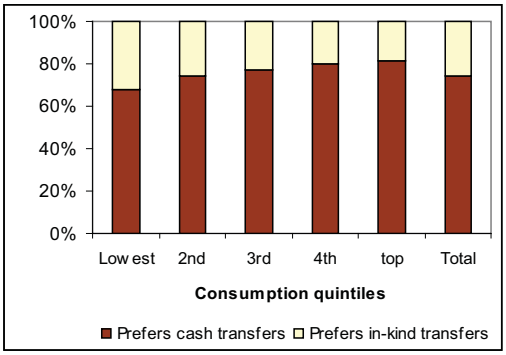
29. **Size, type, and frequency of benefits**. The benefit amount for cash transfer programs has increased marginally in real terms over the past decade.[5] These allowances are still small relative to the needs of a typical poor beneficiary.[6] For instance, the food benefit from VGF and the standard benefit from cash transfer programs are just 21 and 30 percent of the lower poverty line respectively. Even the benefit from the VGD program – three times the amount of wheat provided by VGF – amounts to only 62 percent of the lower poverty line.[7]

30. Low levels of benefits that do not meet the minimum basic requirements are often the norm in many developing countries because of limited financing, trade-offs between coverage and benefit size, and the important concern of not lowering the incentives to work. Recent studies from India and Pakistan show that programs with low levels of benefits are also subject to less leakage than programs with higher benefits, perhaps because of self-targeting.

31. Benefits are usually paid at regular intervals. While food transfers (except VGD) provide benefits for a short period depending on seasonal or emergency needs, all major cash transfer programs operate for longer periods. While entry to a program is based on certain criteria and exit policies are also defined, very few programs have a strategy for graduating beneficiaries out of the program. VGD and the stipend program are among the exceptions. Under the VGD program, the beneficiary saves money over the program cycle, while NGOs provide program participants with skills training and access to credit. Only secondary school girls are eligible for the FSESP stipend and continue receiving it – conditional on attendance and satisfactory academic performance – until they complete secondary school. The subsidized food rations provided in select 'Open Market Sales' markets provide limited quantities of coarse rice after standing in a long queue. It is likely that this form of 'self-targeting' is also likely to lead to less leakage to the non-poor.

32. Beneficiaries appear to prefer cash over in-kind transfers, most likely because cash provides flexibility in deciding what to spend on. About 75 percent of all beneficiaries prefer cash over kind (Figure 6-2) although the preference for cash declines gradually for poorer beneficiaries. However, administrative bottlenecks can lead to delays in payments and fluctuations in the amount of money received in several cash based programs – in several programs, participants received payments every second month or at longer time intervals (Ahmed 2007). There are also drawbacks with bank account payments as many poor households do not have a bank account and require daily remuneration. Food-based programs (e.g. food-for-work or subsidized food sales) become the program of choice during emergency responses due to these considerations.

Figure 6-2: Beneficiaries' preference on cash versus food



Source: HIES (2005)

33. A recent IFPRI evaluation of safety net programs in Bangladesh shows that the choice of food versus cash distribution also depends upon the outcome which one wants to affect and the type of household which joins the program (Ahmed et al 2007). While the cash-based program (RMP) had a greater

[5] For example, the size of the Old Age Benefit has increased from Taka 100 per beneficiary when it was launched in 1997-1998 to Taka 220 in 2007-2008, which is also an increase in real terms. Taka 220 is the standard benefit for all major cash programs.
[6] The VGF food transfer (10kg of wheat per beneficiary per month) is equivalent to Taka 150 (assuming the value of a kg of wheat to be Taka 15, from FPMU Oct 06), while the typical benefit from cash transfer programs is Taka 220.
[7] The population weighted average of stratum level lower poverty lines for Bangladesh is Taka 718/person/month, at 2005 prices.

beneficial impact on household savings and female empowerment measures, the food ration program (IGVGD) has a greater impact in increasing household income and a combined food- and cash-based program (FSVGD) appeared more successful in raising women's caloric intake. Moreover, the type of food provided appears to have intra-household gender implications. The IGVGD and FFA programs provide rice, which has a greater impact on male calorie intake, while the female benefit more when wheat flour is provided in the FSVGD program.

34. **Safety net programs in response to the recent food price shock.** The government has taken a number of relief measures in 2008 to mitigate the impact of the rice price shock on the poor. Traditional government safety nets programs are based mainly in rural areas and are typically not set up as a response to a price crisis. While the coverage of several food-based safety net programs in rural areas was expanded after the rice price shock, just 16 percent of rural and 4 percent of urban households in the previously mentioned World Bank rapid survey of 2008 report benefiting from at least one safety net program. To augment traditional programs, the Government set up Open Market Sales (OMS) outlets in urban areas.

35. The OMS outlets, where key food items, mainly rice, were sold at subsidized rates, appear to have been reasonably effective in benefiting the poor and the vulnerable through its self-selection mechanism. While a quarter of all urban households used OMS, as many as 43 percent of poor urban families – daily laborers – accessed these markets. Fifty six percent of urban households claiming to be severely affected by the price crisis purchased food grains from the OMS outlets, compared to just 13 percent of those who were mildly affected. That said, the coverage of OMS was still insufficient relative to the vast needs of the urban population – about 68 percent of urban households who ate less or skipped at least one meal in a month had *not* used OMS outlets in March/April 2008. This may be because of lack of purchasing power, even at subsidized prices, among some of the poorest households; and some households may not have found the price differential between OMS and the free market to be enough to justify the time spent in accessing an OMS outlet.

36. The Government has budgeted significant resources on existing food based safety net programs in the FY09 budget, with expenditures scaled up from 2.2 to 2.8 percent of GDP. The most significant new safety net initiative included in the FY09 budget is an employment guarantee program for the ultra-poor in selected parts of the country. An individual who meets certain eligibility criteria will be provided work or entitled to receive unemployment benefits for 100 days a year. The success of this program will depend on how well it is targeted and implemented on the ground.

Box 6.3: Some key lessons from employment generation programs across countries

The evidence across countries, including Bangladesh's own experiences and insights from a recent program like India's NREG, suggests a few important lessons for the proposed Employment Generation Program. Some of these lessons, in broad terms, are: (i) getting the design features "right," including setting wages that provide the right incentives, selecting appropriate works projects, targeting of poor areas and ensuring availability of the program during times of need; (ii) introducing a large program in a phased manner, starting with a limited number of districts, to enable learning from experience; (iii) institutionalizing a system of transparency and accountability, supported by an appropriate legal framework; (iv) enhancing the capacity of local governments for implementation; and (v) facilitating the participation of coalitions of stakeholders that empower the poor, including NGOs and community-based organizations. Given that the proposed program will be targeted (rather than guaranteeing work to *all* willing to work for the prevailing wage, as in India's NREG), it may also be useful for the Government to consider strengthening the targeting method and delivery mechanism through the use of a unified targeting system that is currently being field-tested in some parts of the country. Furthermore, recent poverty maps (currently being updated by BBS using HIES 2005) can help in objectively identifying the geographic areas with high poverty where the program can be initially targeted.

37. The experiences of large scale public works programs across countries are mixed and provide useful lessons for Bangladesh's program (see Box 6.3, and section III in Annex 6 for more details). The most recent example is India's vast National Rural Employment Guarantee (NREG) scheme. Given that this program is still in its early days, its impacts and lessons are not yet fully understood. The limited evidence from aggregate data and small studies/social audits indicates its vast potential as well as pitfalls in implementation, many of which are instructive for Bangladesh (see Box A-6.1, Annex 6). However, going by what is known so far, Bangladesh's program appears to differ from NREG in a number of important ways. A crucial difference is with regard to this program's intent to target extreme poor households using certain household criteria, while NREG (backed by an Act of parliament) guarantees wage employment (up to a maximum of 100 days/year for a household) within a program district to every rural household that has an adult willing to work as casual labor at the minimum wage.

38. **Targeting criteria in Government programs**. Programs use different criteria for targeting benefits, and these are not applied universally. Programs such as VGD, VGF, and Old Age Allowance target income poverty but use different sets of criteria. The starting point of how targeting is done is a guideline prepared by the implementing ministry, which sets the targeting criteria, the total number of beneficiaries (including upper limits on the number of male and female beneficiaries), the distribution by district or union parishads (UP), and the amount and duration of transfer per beneficiary. Usually the criteria include income level, asset, and household structure, and demographic features. Based on such criteria, local bodies (UP), in consultation with other local agencies and community, identify beneficiaries.

39. **Coverage and targeting in practice.** About 13 percent of households benefit from at least one safety net program, with targeted programs accounting for 8 percent of households (Table 6-4). The coverage rate among rural households is 15 percent compared to 5 percent among urban households (Table 6-5). The VGF program has the highest coverage of all programs, followed by old age pensions, VGD, and TR.

Table 6-4: Households participating in at least one program (%)

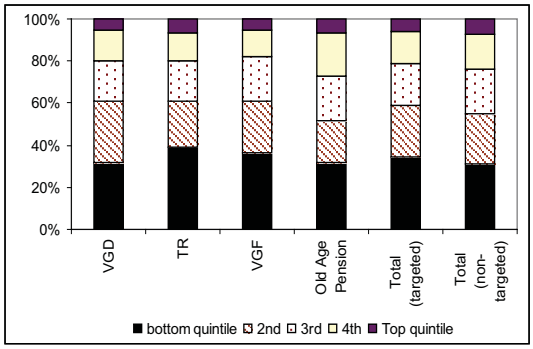
Quintiles	*Non-Targeted*	*Targeted*	*Pension*	*Total*
Lowest	2.3	15.7	3.6	21.6
2nd	2.7	10.6	2.2	15.4
3rd	3.3	7.9	2.2	13.4
4th	2.3	5.3	2.2	9.8
5th	1.6	2.2	0.6	4.4
Total	2.4	8.1	2.1	12.6
Bottom 10%	2.4	16.0	4.6	23.1

Source: HIES (2005)

40. Participation in safety net programs decreases with income/consumption. About 22 percent of households in the lowest consumption quintile benefit from targeted programs, which declines progressively for higher quintiles and is only 4 percent for the top quintile. While such progressive incidence of benefits is a positive feature, a strong area of concern is the low rate of coverage among households in the bottom quintile, given that the extreme poverty rate for the country is 25 percent (Chapter 1). Even among the bottom 10 percent of the population, the combined coverage of all safety net programs is just 23 percent, which includes 16 percent covered by targeted programs.

Figure 6-3: Distribution of beneficiaries across consumption groups

41. In spite of overall coverage being progressive, a sizeable share of the benefits goes to the nonpoor, although the outcomes differ considerably across programs. For example, 41 percent of the beneficiaries of targeted programs are non-poor (i.e. top three quintiles – see Figure 6-3). Given the very low rate of coverage of safety nets in the population, these errors of inclusion (of non-poor beneficiaries) are quite high.



Source: HIES (2005)

42. In terms of which program is able to deliver the maximum share of its benefits to the bottom quintile, TR appears to do the best (39 percent of its beneficiaries are from the bottom quintile), followed by VGF (36 percent). Estimates from surveys other than HIES (2005) suggest a somewhat better targeting performance with two thirds of VGD program participants coming from the bottom 30 percent of the population (Ahmed et al 2007).

43. **Regional distribution of beneficiaries**. Coverage of safety net programs also varies significantly by region and does not correlate well with division level poverty rates. For example, Sylhet with a poverty rate significantly lower than the national average has the highest coverage of safety nets among all divisions. In contrast, Khulna, which has the second-highest poverty rate in the country, has the lowest coverage of safety nets (Table 6-5). Low coverage among the total population of certain districts also translates to low coverage among the poorest. Forty one and 28 percent of households from the poorest 10 percent of the population participate in safety net programs in Sylhet and Chittagong respectively, compared to 15 percent in Barisal and Khulna (see Annex 6, Table A-6.2).

Table 6-5: Distribution of beneficiaries and poverty rates

Division	*Poverty Headcount (%)*		*%of households who are beneficiaries (%)*		
	2000	*2005*	*2005 Total*	*2005 Rural*	*2005 Urban*
Dhaka	46.7	32.0	14.3	20.0	4.9
Barisal	53.1	52.0	13.3	14.8	5.0
Chittagong	45.7	34.0	11.1	12.9	5.7
Khulna	45.1	45.7	9.6	11.0	4.2
Rajshahi	56.7	51.2	12.1	13.0	6.7
Sylhet	42.4	33.8	22.4	24.3	11.3
National	**48.9**	**40.0**	**13.0**	**15.5**	**5.5**

Source: HIES (2000, 2005)

44. **Leakage of benefits from safety net programs.** The evidence on leakage is somewhat mixed and suggests high variation across programs. The weight of evidence points towards higher leakage from food transfer programs, likely because of the large number of intermediaries in the system and the difficulties surrounding procurement, distribution, and storage of food.

45. **Towards a unified targeting system.** Having a national targeting system in place is useful as it can be used to coordinate and integrate programs, as well as respond quickly to the needs of specific target groups or geographical areas (e.g. areas affected by disasters). In order to reduce targeting errors, improve transparency, and reduce multiple targeting methods, countries like the Philippines are considering national targeting systems based on a Proxy Means Test (PMT) (see Box 6.4).

Box 6.4: Creating a central agency as part of safety net reform: the case of the Philippines

Similar to Bangladesh and many other countries, the Philippines has multiple safety net programs across many ministries and tiers of government. This leads to extreme poor households falling beneath the cracks as programs do not coordinate with each other and funding cannot be reallocated from one program to another in a strategic manner. Following the rapid rise in prices, and building upon earlier work by the government on defining social protection programs, the President passed a government order establishing a National Social Welfare Program and assigning

operational responsibilities to the Department of Social Welfare and Development. A Cabinet level post has been created to head this agency.

There are other critical steps which the government of Philippines has taken to strengthen their safety nets. Using a Proxy Means Test methodology, it is creating a database of poor households in 140 poorer municipalities and 10 cities by the end of 2008. The Government intends to roll out this database to eventually cover the entire country. In parallel, the Government is piloting a Conditional Cash Transfer (CCT) program which provides poor households monthly cash payments on the condition that their children attend school at least 85 percent of the time and complete their vaccination schedule. Moreover, cash is also conditional on mothers attending nutritional education and breastfeeding training.

46. The PMT method involves identifying key correlates of poverty from household data and using their relative importance in a formula to yield a score that proxies the consumption of households. Data on these correlates, which are intended to be relatively easily observable, are collected from households applying for the program. The formula is used to select households below a certain predetermined cut-off score. The experience of other countries suggests that PMT typically needs to be complemented by a comprehensive outreach campaign to maximize participation of the poor. While this method requires significant administrative capacity, the data requirements are lighter than those required for means testing (income data).

47. In Bangladesh, a mixed method – using a combination of geographical targeting, PMT, and community validation of the targeting results – could be an approach the Government could introduce for its national programs. In such a targeting system, the PMT can be used to identify the initial list of beneficiaries and a community-led effort can be used to validate the list and adjudicate complaints and appeals, to reduce errors due to misreporting and take into account the special circumstances faced by specific small groups that a PMT by its very nature cannot. At the same time, a mixed method would achieve a balance between the subjectivity inherent in a community-based process and the objectivity of a PMT, so that the original rationale behind introducing a PMT is not lost.

Administration of safety net programs

48. Many of the weaknesses identified in the safety net system are linked to how the programs are administered and coordinated. The *first* major constraint is the lack of a single policymaking authority for safety net programs in Bangladesh. Programs are planned and implemented by thirteen ministries, as well as the Bangladesh Bank and Palli Karma-Sahayak Foundation (PKSF). There is little coordination among the ministries in planning, targeting and implementing programs. The patchwork of social protection initiatives – at least 30 known programs delivered through multiple agencies – make it difficult to determine the accountability of the implementing agencies. There is also considerable overlap in programs across Ministries, in terms of objectives and target population. For example, education stipend programs are run by three different ministries, and multiple ministries are involved in emergency- or disaster-related programs. The Philippines has recently rationalized its multiple safety net programs under one central agency and designated a Cabinet-level post to head this agency. In the wake of the food price crisis, it is also investing more resources into ensuring accurate targeting of safety net resources by investing in household targeting systems. Box 6.4 discusses these reforms in more depth.

49. A *second* important issue is the large number of intermediaries involved in the delivery system programs, which reduces efficiency and increases opportunities for leakage. For example, the funds allocated for the VGD program flow through four separate layers before they reach the IGVGD beneficiaries in the form of food (see Annex 6, Figure A-6.1). In addition, VGD and other food transfer programs depend on the public food distribution system, with food being loaded and unloaded at a number of points before finally being delivered to beneficiaries. PESP also involves a large number of intermediaries involved in selecting students, disbursing stipends, and monitoring the program.

50. A *third* key constraint is the weak capacity of local Governments (UP) primarily responsible for implementation of programs. The government has recently introduced measures to strengthen the capacity and authority of local governments. Additional discretionary resources would be made available to UPs conditional on them implementing a host of financial and social controls to enhance transparency and accountability of the resources. In addition, one component of the World Bank's LGSP project finances a pilot to provide social assistance through local governments.

Role of non-government institutions in safety nets

51. In addition to public safety net programs, many of the anti-poverty programs administered by non-government institutions including MFIs also act as safety nets that protect the consumption of households, particularly during shocks. As seen in Chapter 3, there is much evidence to suggest that microfinance reduces the consumption *variability* of borrowers across time or seasons – a clear indicator of reduced vulnerability to shocks[8] – most likely due to increased access to credit and creation of income-generating assets among microfinance borrowers. There is also evidence that MFIs enable their members to cope better with natural disasters (e.g. the floods of 1998).

52. As a part of their efforts to expand outreach among the poorest, a number of initiatives have been adopted by MFIs like Grameen Bank, ASA, BRAC and PKSF, many of which combine safety net type interventions with flexible microfinance products (see Box 6.5). The rationale for combining such approaches is that the primary objective of microfinance – developing sustainable livelihoods – cannot be met among the extreme poor unless a household is first able to meet its minimum needs, which includes coping with the effect of shocks. Some of these programs are implemented through a partnership between MFIs, the government, and international donors in certain cases – a notable example being the Income Generation for Vulnerable Group Development (IGVGD) program (Box 6.5). MFIs have also become increasingly active in the severely *Monga*-prone areas, experimenting with a number of initiatives to address chronic poverty and vulnerability caused by seasonal deprivation in these areas.

III. Summary and implications for policy

53. Safety net programs have an important role to play in Bangladesh, given the high incidence of shocks reported by households and the large size of the population at the risk of falling into (or deeper into) poverty as a result of shocks. There is also a high concentration of the Bangladeshi population around the poverty line which suggests that many are vulnerable to falling into poverty as a result of even a small shock. Among household-specific shocks, health shocks, especially when these occur to income earners, are particularly important contributors to poverty. Sharp income shocks, such as the recent rise in food prices, aggravate poverty, contribute to malnutrition, and can have irreversible human capital consequences, especially for infants under the age of two. These highlight the need for a safety net system that can be scaled up and flexibly adjusted to mitigate the impact of sudden shocks.

Box 6.5: Innovations by microfinance institutions to reduce vulnerability among the extreme poor

In spite of their rapid success in expanding coverage, by the 1990s it appeared that microfinance programs were not able to reach a large proportion of the "poorest of the poor." Specific groups such as beggars and the elderly poor were systematically excluded (Zaman, 1999), while about 40 percent of landless households were not served (Pitt and Khandker, 1998). Lower coverage of MFIs in the poorest areas, including *Monga*-prone districts, lent credence to this criticism. Inadequate coverage among the poorest may have occurred due both to supply-side (high transaction costs of dealing with poorest) and demand-side factors (the standard microfinance "product" being less suited to the needs of the poorest).

[8] See Morduch (1999), Pitt and Khandker (1998) and Zaman (1999).

The MFIs in the 1990s began to employ more flexible approaches to expand outreach to the poorest. Recognizing that traditional group-based loans with weekly repayment schedules were not best suited for the poorest, ASA was among the first MFIs to offer individual loans, more flexible repayment schedules and smaller loan sizes. Grameen Bank initiated individualized loans at zero interest for beggars in 2003, which now covers about 97,000 clients. Through the IGVGD and Targeting the Ultra Poor (TUP) programs, BRAC has combined safety net and microfinance to provide sustainable livelihoods for extreme poor women. Each participant in the IGVGD program, which is implemented through a partnership between BRAC, the World Food Program and the government, receives a monthly ration of 30 kilograms of wheat for a period of 18 months. During this period, BRAC provides training to mainstream these women into its microfinance and income generation activities. Over 1.2 million households utilized this program by 2000 (Matin and Hulme, 2003). The TUP program provides a subsistence stipend and productive assets to poor women as a grant for a year or two and facilitates household savings before introducing them to microcredit. PKSF's Ultra-Poor Program (UPP) operates alongside its credit programs in high poverty areas, enhancing the capacity of beneficiaries through training on income-generating activities.

MFIs have become increasingly active in the severely *Monga*-prone areas as well. The DfID-financed *Char* Livelihood Project (CLP) has recently targeted poorest households in these areas, by providing income-generating assets in grants as a precursor to microfinance. PKSF has initiated programs through partner NGOs in these regions by offering consumption as well as traditional production loans to extremely poor households.

54. Bangladesh also suffers from recurring climate-related shocks. Some of these are seasonal – large areas in the northwest are subject to a phenomenon called *Monga*, which occurs during the lean agricultural season in October and November every year and contribute to high chronic poverty. Others are more unpredictable, like major floods and tropical cyclones. The most recent floods in 2007 – less than a decade after the severe floods of 1998 – affected 46 of the country's 64 districts, including some of the poorest areas in the worst-affected Dhaka, Sylhet, and Rajshahi divisions.

55. The Government of Bangladesh has steadily raised the expenditures on these programs since the mid-1990s, with safety net expenditures close to 2 percent of GDP in the past few years. Several large programs are relatively well-targeted and some link immediate safety net needs to longer term income generation and health needs. However, evidence in this chapter suggests that safety net programs are still inadequate to address the vast needs of the poor and the vulnerable. Coverage of these programs taken together is low and, coupled with targeting errors, imply that many of the poorest households are excluded from any assistance. There are stark mismatches between the spatial distribution of poverty and that of coverage of safety net programs, with two of the poorest divisions having a much lower rate of coverage among its population than Sylhet or Dhaka. Correcting these mismatches therefore needs to be a critical element in a poverty-reducing strategy for the lagging areas of the country. Extreme poor in urban areas are exposed to a high degree of risk linked to factors that include lack of housing and basic amenities, insecurity, and high cost of living (see chapter 3), with little or no access to safety nets.

56. Increasing the linkages between safety net programs, human development of children, and income generation activities (including access to microfinance) would also improve the long-term impact of safety nets on poverty. Programs such as IGVGD, which link safety nets with longer run income generation opportunities, illustrate the benefits of investing in these linkages. Conditional cash transfers (CCTs) linked to education and/or health outcomes can enhance the incentives among urban poor families to keep their children in school and/or utilize health services. Such programs can also be effective in lagging regions where returns to education are low (see chapters 2 and 4).

57. The lack of an overall coordinating authority constrains a coherent approach to poverty-targeted programs. The large number of programs, Ministries, and intermediaries involved increases the administrative costs of delivering benefits. Targeting criteria are often hard to verify and apply, which leads to leakage of benefits to the non-poor. The Philippines is turning the recent food price crisis into an opportunity to reform their safety net system. Programs are being consolidated under one new national umbrella body headed by a Cabinet level position. Steps towards moving to a uniform targeting system

are being taken, as is the establishment of a large database of the poor. A conditional cash transfer program is being piloted providing cash payments on condition that households invest in the education and healthcare of their children. The sequencing and nature of these reforms offer lessons that are highly relevant for Bangladesh.

58. A number of reforms are currently being considered to strengthen the safety net system in Bangladesh. A new targeting method using Proxy Means Tests is likely to be introduced for a cash transfer program in urban areas. This pilot program will link cash transfers to the human development of children. It will be important to frame these new initiatives under a national social protection strategy which lays the basis for consolidating and coordinating programs, improving their administrative efficiency and coverage among the poor.

59. While this chapter has primarily focused on public safety nets with a view towards informing the government's efforts to improve the system, the important role played by non-government institutions must be underscored as well. In particular, the MFIs' initiatives are critical to test innovative approaches and identify the kind of interventions that are most effective. The lessons gained from such experimentation can then be used to scale up the interventions – by the government, the MFIs themselves ,or through joint efforts of the kind that are already occurring (as in the case of IGVGD).

Safety net programs in Bangladesh mostly aim to enhance the capacity of households to cope with risks, rather than provide *ex ante* insurance against the adverse impact of risks. In the longer term, a comprehensive social protection strategy should also include appropriate mechanisms to reduce *ex ante* risks for households – particularly in the informal sector where pensions and insurance are largely unavailable. While designing such programs in a country with a large informal sector will not be easy, the extensive coverage of microfinance in Bangladesh provides a possible base from which broader financial services, including specific types of insurance, can be extended to the informal sector. The Government and microfinance institutions are now piloting some efforts in this direction.

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Annex 1: Poverty, Growth, and Inequality

I. Poverty measurement in Bangladesh – a brief overview

The World Bank and the Bangladesh Bureau of Statistics (BBS) have had a long-standing partnership on poverty measurement issues using data from successive rounds of the Household Income Expenditure Surveys (HIES). The World Bank supported the design and implementation of the 2005 HIES and a Bank team worked closely with BBS analysts on deriving nationally representative poverty and inequality estimates.

Intuitively, Cost of Basic Needs (CBN) poverty lines represent the level of per capita expenditure at which a household can be expected to meet their basic needs (food and non-food). As prices and consumption patterns vary between different geographical areas, poverty lines are estimated for each of 16 different geographical areas or sampling *strata*. To ensure that comparisons over time are made on the basis of poverty lines that represent the same purchasing power, CBN poverty lines estimated for the new base year of 2005 were then deflated by an appropriate price index to derive poverty lines for 2000. In the course of the BBS-World Bank collaboration, a number of methodological issues were examined closely, which can be classified into two broad categories: (i) updating the pre-existing poverty lines to 2005, using price indices to adjust for changes in cost of living; and (ii) re-estimating poverty lines using the 2005 data and deflating these lines with price indices to obtain comparable poverty figures for previous survey years. Under (ii), a number of different approaches were tried out, including estimating a single poverty line for the country and calculating appropriate spatial price indices to adjust for geographic differences in cost of living, in lieu of estimating poverty lines separately for each stratum.

BBS in consultation with the Planning Commission decided on one method out of the different options explored, which involves re-estimating poverty lines from HIES 2005 for 16 different strata using the Cost of Basic Needs (CBN) method – similar to that used to derive poverty lines based on HIES 1991-92. Re-basing the poverty lines using 2005 data – as opposed to just updating the previous lines for cost of living – ensures that these are based on the latest underlying sampling frame (using Census 2001), and also conforms to the view that poverty lines should be re-based every 10-15 years to reflect changes in consumption patterns.[1] Box 1 below describes the exact steps involved in implementing the selected method.

Box A-1.1: Deriving poverty lines for Bangladesh

How to estimate *what it would cost a household to meet its basic needs* in the base year (2005)? *First*, the cost of a fixed food bundle was estimated. This bundle, consisting of 11 key items, which has been used in Bangladesh through its entire history of poverty measurement, provides minimal nutritional requirements corresponding to 2122 kcal/day/person. The food poverty lines were computed by pricing this bundle with the average price of each item for each of the fifteen geographic areas. The *second* step entailed computing two "allowances" for non-food consumption. The first was calculated as the average amount spent for non-food items by those households whose total consumption was equal to their food poverty line – the "lower" non-food allowance. The second was the average amount spent for non-food items by those households whose food consumption was equal to their food poverty line – the "upper" non-food allowance. The *third* step consisted of adding to the food poverty lines the lower and upper non-food allowances to yield the lower and upper poverty lines for each of the 16 geographical areas.

Price indices for deflating the 2005 poverty lines to 2000 were derived by combining price information available in the HIES and Consumer Price Index (CPI). The HIES data provides price information and

[1] The sampling frame of 2005 HIES, based on the 2001 census, is likely to better reflect the current economic and demographic situation. Poverty lines based on this frame will yield better comparison with future poverty estimates since the same sampling frame will be also used for future surveys until the Census of 2011 becomes available.

budget share of food items that account for more than half of total household expenditure, which was used to compute food price indices for each geographic area. Price indices for non-food items were taken from the urban and rural non-food component of the CPI.

Due to its similarity with earlier methods employed in Bangladesh, the selected method also yields a high degree of consistency with the results obtained from previously used poverty lines. The poverty trends obtained using *other methodological options* serve as important cross-checks for the robustness of poverty trends to the choice of particular poverty lines or methods. The results of this analysis, including the poverty estimates and trends derived from the method recommended by BBS, were endorsed by a Steering Committee set up by the government on August 13, 2006.[2]

II. Adjusting consumption expenditure for household composition and economies of scale: an investigation

In order to measure welfare at the individual level and to estimate poverty rates, per capita expenditures are used in Bangladesh, ignoring the composition of households (the number of adults and children, for instance) and the economies of scale in consumption that may be available to larger households. Such effects are hard to quantify in a universally acceptable form, and therefore excluded from poverty measures adopted by many countries including Bangladesh. Having said that, it is important to see how sensitive the poverty estimates – particularly the trends over time – are to these adjustments. Two specific types of adjustment are considered for this sensitivity analysis.

Firstly, household consumption expenditures are adjusted by weighting all household members younger than 18 by a factor s (<1) and all adult household members as 1. While this may appear as oversimplifying the problem of adjusting for the composition of a household, using a more complex equivalence scale, for instance one that differentiates between sex and various age categories, is even more problematic for a number of reasons. First, no consensus on such a scale exists for Bangladesh to the best of our knowledge. Second, because such scales are generally based on nutritional requirements, they are applicable only to food consumption and not to the vast array of other items that enter into household consumption. Third, even a simple adjustment is sufficient for the purpose at hand – namely to show the sensitivity of poverty trends to such an adjustment.

Secondly, household consumption is adjusted by a "scale factor" that captures the fact that the "true" welfare of larger households may be higher than what is suggested by unadjusted per capita expenditures, given the economies of scale in consumption. While there are sound arguments in the economic literature in favor of such scale adjustments (see, for instance, Lanjouw and Ravallion 1995), making such adjustment is also problematic because it is hard to define the precise adjustment applicable to Bangladesh.

To examine the sensitivity of poverty trends to household composition and scale effects, a somewhat arbitrary method is adopted that involves considering a number of different scenarios – similar to the approach used in related literature for other developing countries.[3] The number of equivalent adults in a household is given by $AE = (A+ s.C)^t$; where A is the number of adults, C is the number of children (below age 18) in the household, the parameter s is the expenditure on a

[2] Chaired by the Planning Secretary, the meeting counted among its participants the Director General, BBS, Member GED, DG BIDS, Research Director BIDS, representatives from other government departments and Dhaka University, and the World Bank.

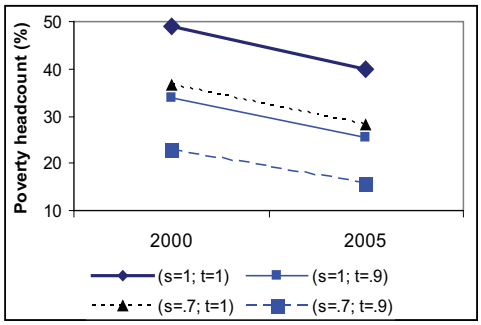
[3] See, for example, "Poverty in Pakistan: vulnerabilities, social gaps and rural dynamics," World Bank (2002a).

child relative to that on an adult; and the parameter, t (between 0 and 1), measures economies of scale. When t is set to unity, the expenditure measure does not adjust for household size. Total household expenditure for each household is then divided by AE to arrive at an adjusted adult equivalent expenditure for the household, which is then compared to the poverty lines used in this report to arrive at adjusted poverty estimates.

For the purpose of this analysis, s is set between 0.7 and 1, while t is set between 0.8 and 1. Since economies of scale primarily arise from the existence of shared public goods in the household, t should be high when a substantial fraction of household expenditure is on private rather than shared goods. Since households in Bangladesh spend a large proportion of their budget on food (around 53 percent on the average) that is essentially a private good, economies of scale are likely to be limited, so that t should be set at or close to 1. For s, estimates used for other countries suggest that a range of 0.7 to 1 is a reasonable assumption.

Figure A shows national poverty trends for four of such scenarios – for all possible combinations when s is set at 1 and 0.7 and t at 1 and 0.9. Poverty headcount estimates are lower when s and t are set at less than unity for obvious reasons; however, the trend of change from 2000 to 2005 is very similar for all tested values of s and t. The fact that comparative trends across time are quite robust to such scale adjustment suggests that analysis using *unadjusted* poverty estimates, which is used throughout this report, is a reasonable methodology to adopt. That said, the issue of household composition and economies of scale in consumption is one that merits more rigorous analysis in the course of future poverty work in Bangladesh.

Figure A: Poverty headcount rate for different adjustments for household composition and scale effects



Source: HIES (2000, 2005)

III. Methodologies for estimating growth elasticity of poverty

- ***Regression method***. This method involves estimating γ, β, and δ from regressions using growth rates of stratum average poverty rates, per capita consumption expenditures, and Gini coefficients. Regression of the growth rate of poverty rates on the growth rates of per capita consumption expenditure and Gini coefficient provides γ (the gross elasticity of poverty to growth) and β (the elasticity of poverty to inequality). Regression of the growth rate of Gini coefficients on the growth rate of per capita consumption expenditures provides δ (the elasticity of inequality to growth). To run the regressions, a database including poverty rates, Gini coefficients, and mean expenditures at the stratum level using HES 1991-1992, HES 1995-1996, HIES 2000, and HIES 2005 is constructed.
- ***Bourguignon (2002)'s method***. This method estimates γ and β by assuming the distribution of per capita consumption expenditure is log normal. The assumption provides a simple formula deriving both γ and β using basic statistics from the distribution of per capita expenditure. δ (the elasticity of inequality to growth) is calculated by dividing the percentage change of an inequality measure (standard deviation of expenditure) by the percentage change of mean expenditure. For this analysis, only HIES 2005 data is used.
- ***Datt-Ravallion (1992) method***. This method follows the well-known growth decomposition method. For this analysis, per capita expenditure data for 2000 and 2005 are used. This

method first creates a hypothetical distribution of per capita expenditure as if the expenditure grew at the same rate among all households between 2000 and 2005. Since this hypothetical distribution of expenditure and the 2000 distribution share the same distributional properties, the difference in poverty rate between the two distributions can be attributed solely to economic growth between 2000 and 2005. On the other hand, since the hypothetical distribution and the 2005 distribution share the same mean expenditure, the difference in poverty rates can be attributed solely to a change in distribution/inequality between 2000 and 2005. Deriving the direct impact is trivial from the first comparison. The indirect impact is derived from dividing the percentage change in poverty rate from the second comparison by the percentage change in mean expenditure.

Each methodology has its pros and cons. The regression method assumes that the relationship among growth, poverty, and inequality at the national level can be estimated by the variations at the stratum level and over time; however, there is no simple way to test the validity of this assumption. Also, small sample biases are inevitable: at most, 48 observations are available for regressions (16 strata times 3 years – one year needs to be dropped due to the need to compute growth rates for all variables). On the other hand, since this method uses multi-year data, the growth elasticity tends to reflect a more stable and long-term relationship among growth, inequality, and poverty.

The validity of Bourguignon (2002)'s method hinges on the assumption that the distribution of per capita expenditure can be approximated by a log normal distribution. Bourguignon (2002) empirically tested this method for projection using a large cross-country data and found this method achieved fairly good accuracy.

In the Datt-Ravallion (1992) method, the validity of the growth elasticity is subject to how closely the expenditure data form the select two surveys can predict the future relationship among growth, inequality and poverty, or more precisely, the elasticity of poverty to growth. If the selected two surveys were to reflect some extraordinary circumstances, the projection based on this method would be biased. This method, however, has merit as well. Since distributional properties are highly multidimensional, the impact of a change in distribution is difficult to be measured by one aspect of distribution such as Gini coefficient or standard deviation. The Datt-Ravallion method fully captures the distributional impact by comparing two distributions directly.

Comparing the estimates from three methods. The 2005 poverty rate is simulated with the estimated net growth elasticity of poverty and the actual poverty rate of 2000. Table A shows that the simulations using Datt-Ravallion (1992)'s method is closest to the actual 2005 poverty rate estimated directly from HIES 2005. Regression method also provides fairly good projections; however, the indirect effect via inequality seems to

Table A: Comparison in estimates of growth elasticity

Growth Elasticity	Regression method	Bourguignon (2002)	Datt-Ravallion (1992)
Direct (γ)	-2.26	-1.79	-1.62
Indirect ($\beta\delta$)	0.64	0.00	0.12
Net Elasticity (λ)	-1.62	-1.79	-1.51
Projected 2005 poverty rate (%)	39.5	38.5	40.1
Actual 2005 poverty rate (%)	40.0		

Source: Staff estimation using HIES 1991-1992, 1995-1996, 2000, 2005.
Note: "NA" refers to "Not Available". "Actual 2005 poverty rate" refers to the poverty rate estimated from HIES 2005. "Projected 2005 poverty rate" refers to the poverty rate estimated from the actual 2000 poverty rate and the net growth elasticity.

be too high in the light of the fact that the Gini coefficient did not change much between 2000 and 2005.[4] Projections based on Bourguignon (2002)'s method matches the actual poverty rate of 2005 less closely than for the other two methods. This might be in line with the fact that log of per capita expenditure does not pass a normality test. As a result, Datt-Ravallion (1992)'s method, which yields a net elasticity estimate of -1.51, is selected for projecting future poverty rates. Nevertheless, the similarity in estimates based on the Datt-Ravallion and regression methods confirms that the estimates are reasonably stable across different methods.

Projections based on the selected elasticity: Three alternate growth scenarios were considered – namely that real GDP in Bangladesh would grow by 4.5, 5.3 and 7.5 percent per annum – to forecast the headcount index of poverty in the year 2015. The annual growth rate of 5.3 percent is a baseline scenario since that was the average annual growth rate of real GDP between 2000 and 2005. The GDP growth rates have to be converted to the growth of per capita expenditure from household surveys to apply the estimates of net elasticity of poverty to growth. The ratio of the annual growth rate of per capita household expenditure in 2000-2005 (2.3 percent) to the annual GDP growth in 2000-2005 (5.3 percent) was used to convert GDP growth rates to growth rates of per capita household expenditure.[5] The elasticity estimate (-1.51) was then applied to the per capita consumption growth rates to obtain poverty projections. The simulations indicate, for example, that if real GDP were to grow at 5.3 percent between 2005 and 2015, the incidence of poverty would decline from 40 percent to 27 percent (see Figure A-1.5 for all projections).

An analysis of robustness: assuming no change in household size

An important driving force of poverty reduction between 2000 and 2005 is a sizable reduction in the average household size between 2000 and 2005 (from 5.18 to 4.85), which is likely a reflection of reduction in the fertility rate in preceding years. The above projections implicitly assume that the large reduction in both the fertility rate and household size would continue till 2015. These assumptions may not be unrealistic, but to gauge the impact, it would be useful to experiment another extreme scenario: no change in household size since 2005 onward.

Such an assumption affects (i) the estimation of growth elasticity and (ii) the estimated growth rate of per capita expenditure for each projected GDP growth rate.

Estimation of growth elasticity. To project the growth elasticity under the scenario that the average household size were to be unchanged between 2000 and 2005, the household size of HIES 2005 data was artificially inflated so that the quintile average household sizes would be the same as those of HIES 2000. The adjustment was made separately for each quintile because there are huge differences in household size reduction between 2000 and 2005 across quintiles. An "adjusted" per capita household expenditure was computed by dividing the household expenditure by the adjusted household size. Since the adjusted per capita expenditure is smaller than the actual one, the national poverty headcount rate in 2005 would increase to 45.2 percent from 40 percent, suggesting that household size reduction accounted for about half of the poverty reduction between 2000 and 2005.

[4] If upper poverty lines are used to adjust per capita consumption expenditure for spatial price differences, Gini coefficients in 2000 and 2005 are 0.307 and 0.309, respectively.

[5] In the previous Bangladesh Poverty Assessment, projection of national poverty rates was done after projecting poverty rates for urban and rural areas separately. This approach was not adopted this time because there is simply no way to isolate migration effects from urban and rural growth elasticity estimates.

Using the *new/adjusted* distribution of per capita expenditure, the overall growth elasticity becomes -1.6 (compared to -1.51 with the actual distribution). The direct effect is -1.61, which is almost identical to the earlier estimate; the indirect effect is 0.01, compared to 0.12 from the earlier estimate. Thus the adverse impact of inequality on poverty reduction is *lower* when the household size is held constant, compared to the actual case where household size fell significantly. As a result, the responsiveness of poverty to per capita consumption growth is *higher* when household size is held constant compared to the actual case.

Projected growth rate of per capita expenditure. As mentioned earlier, to project the poverty headcount rate, GDP growth rate needs to be translated to a growth rate of per capita household expenditure. For the previous projections, the ratio of the annual growth rate of per capita household expenditure in 2000-2005 to the annual GDP growth in 2000-2005 (2.3/5.3) was used for this conversion. But now, with the average household size held constant between 2000 and 2005, the annual growth rate of per capita household expenditure declines to 0.9, which yields a conversion ratio of (0.9/5.3). This implies that the same annual GDP growth scenarios of 4.5, 5.3 and 7.5 percent correspond to much lower rates of growth of per capita household expenditure.

New projections for poverty headcount rate in 2015. Table B summarizes the poverty projections with the new/adjusted estimates of elasticity (-1.6) and growth rates of per capita household expenditure. The pace of poverty reduction would slow down significantly if the average household size does not change from 2005 to 2015. Even if GDP grows at 7.5 percent annually, the projected poverty headcount rate would be 32 percent in 2015 compared to 22 percent if household size were to decline at the current rate.

Table B: Projected household headcount rate in 2015 if household size does not change after 2005 (%)

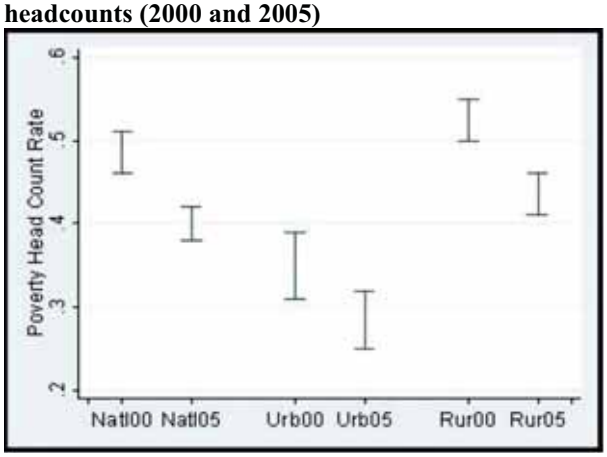
Annual GDP growth rate (%)	Assumption in hhsize	
	No change	Same pace as till 2005
5.3	34.3	27.0
4.5	35.1	28.9
6.0	33.5	25.4
7.5	32.0	22.1

Source: Staff estimation using the WDI 2008 and HIES 2000, 2005 data.

It is easy to see that the main reason for the lower projections is a much lower impact of GDP growth on the growth of per capita expenditure. No change in household size implies a high population growth, which reduces the growth rate per capita household expenditure (and per capita GDP) for any given GDP growth rate.

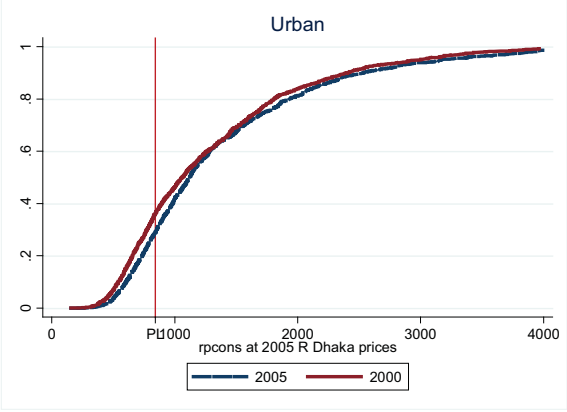
IV. Figures and tables referred to in main text

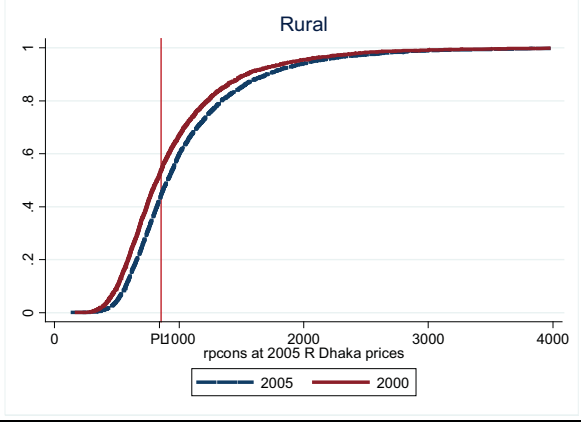
Figure A-1.1: 95% Confidence Intervals for poverty headcounts (2000 and 2005)



Source: HIES (2000 and 2005)

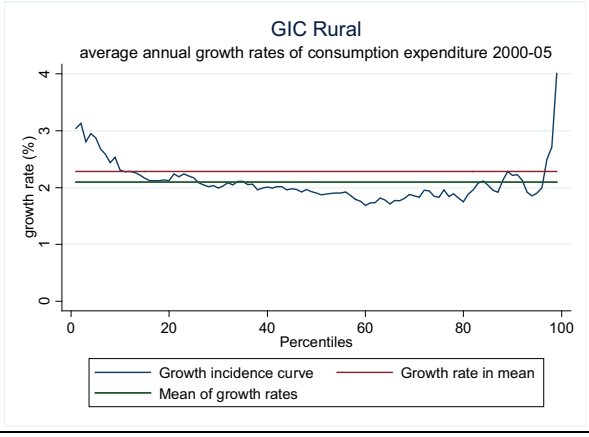
Figure A-1.2: Cumulative distribution of expenditures for urban and rural areas

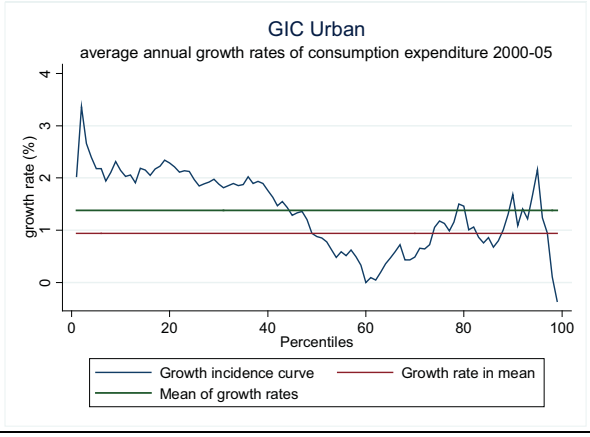




Source: HIES (2000 and 2005)
Note: The poverty rate is given by the Y-axis of the point where the cumulative distribution functions intersects the poverty line.

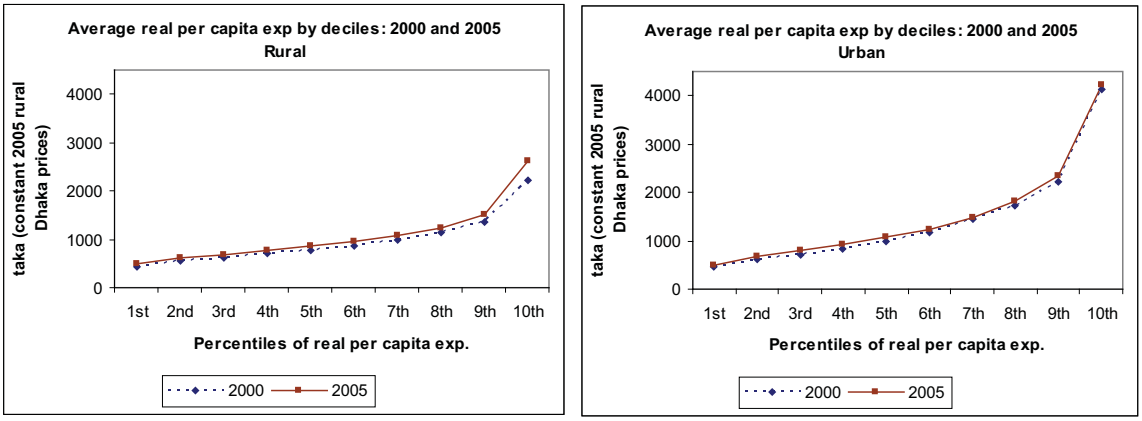
Figure A-1.3: Growth Incidence Curves (2000-2005) – Rural and Urban





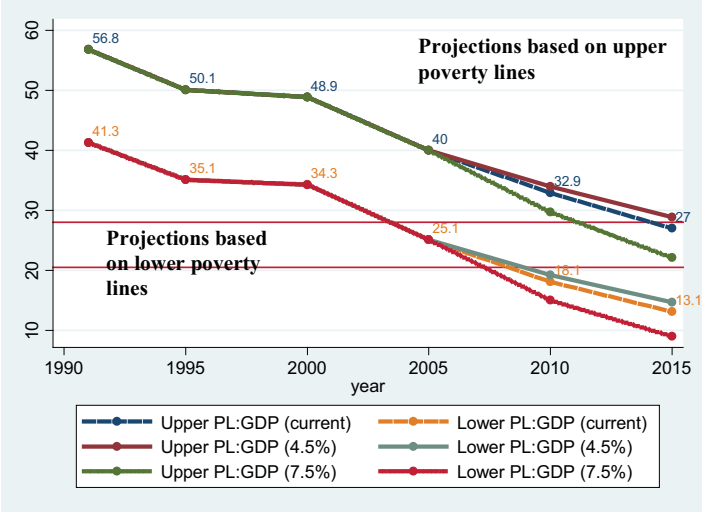
Source: HIES (2000 and 2005)
Note: Growth is considered pro-poor if growth rate in mean < mean of growth rates, which is the case for urban areas.

Figure A-1.4: Average per capita real expenditures by decile - rural and urban



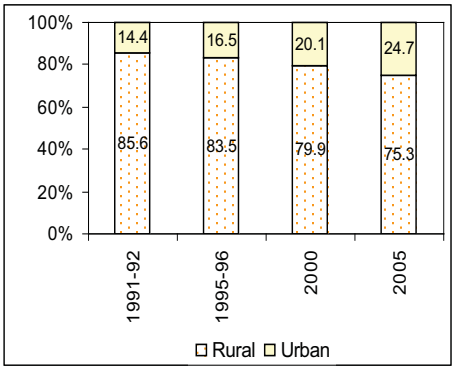
Source: HIES (2000, 2005)

Figure A-1.5: Projections of poverty rates till 2015



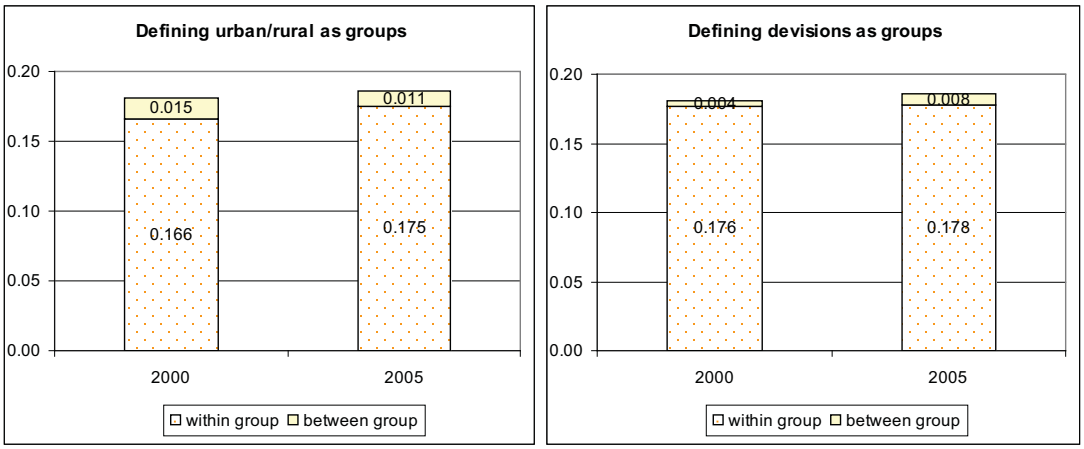
Source: Poverty rates after 2005 are projected using the net elasticity based on Datt-Ravallion (1992) method.

Figure A-1.6: Urban-Rural shares of population from successive HIES rounds



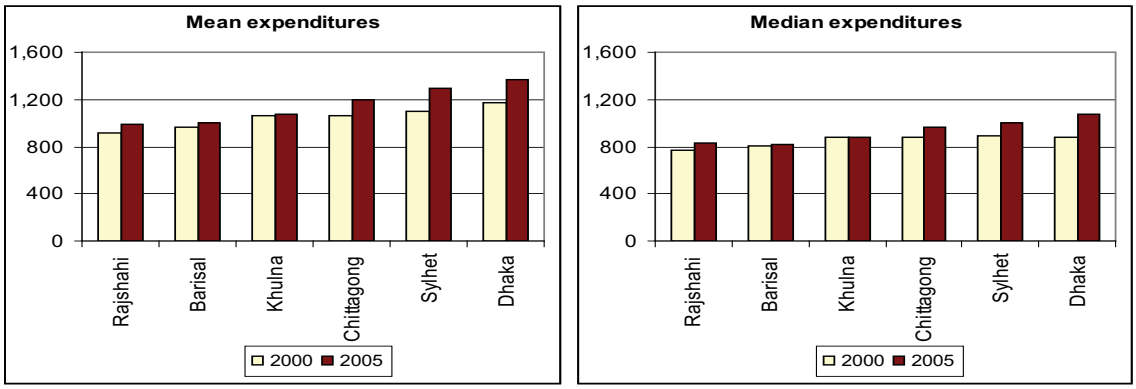
Source: HIES (2000, 2005)

Figure A-1.7: Theil inequality index for "within-group" and "between-group" components



Source: HIES (2000, 2005)

Figure A-1.8: Average per capita real expenditures by division (2000 and 2005)



Source: HIES (2000, 2005)

Table A-1.1: Estimates of the number of poor from HIES (2000 and 2005)

Year		Pov rate (%)		No. of poor	
	*Population**	*Upper PL*	*Lower PL*	*Upper PL*	*Lower PL*
2000	126,000,000	48.9	34.3	61,563,600	43,205,400
2005	139,000,000	40.0	25.1	55,600,000	34,930,700

Source: HIES (2000, 2005)
Note: calculated as sum of population weights (=hhold weight*hhold size) for each survey round.

Table A-1.2: Long-term trends in poverty headcount

	1991/92	1995/96	2000	2005
Upper Poverty Line				
Rural	59.0	54.5	52.3	43.8
Urban	42.6	27.8	35.1	28.4
National	56.8	50.1	48.9	40.0
Lower Poverty Line				
Rural	44.0	39.4	37.9	28.6
Urban	23.6	13.7	19.9	14.6
National	41.3	35.1	34.3	25.1

Source: HIES (different rounds). *Note*: Calculated using the Upper and Lower Poverty Lines of 2005, adjusted for price changes between years.

Table A-1.3: Poverty and Inequality in the South Asia region							
	Periods	**Gini of per capita consumption**		**Poverty headcount rate**		**GDP per capita (constant 2000 $)**	
	Start -- End year	*Start*	*End*	*Start*	*End*	*Start*	*End*
Bangladesh (1)	2000---05	0.31	0.31	48.9	40	353	415
India (2)	93/94 --- 99/00	0.29	0.32	29.2	22.7	353	454
Nepal (3)	95/96 --- 03/04	0.34	0.41	41.8	30.9	206	232
Pakistan (4)	98-99 --- 04/05	0.31	0.3	32	29.2	522	596
Sri Lanka (5)	90/91 --- 2002	0.32	0.4	26.1	22.7	595	880

Source: (1) HIES (different rounds); (2) Staff Estimation based on Deaton and Dreze (2002); (3) World Bank (2006); (4) World Bank staff estimation based on PIHS 2000-01 and 2004-05; (5) HIES surveys (DCS)
Note: Poverty lines are defined differently across countries; so poverty headcount ratios are not comparable across countries.

Table A-1.4: Absolute Gini index of per capita expenditure		
	2000	**2005**
National	0.31	0.35
Urban	0.37	0.37
Rural	0.27	0.31

Source: HIES (2000, 2005)
Note: 1) Nominal consumption are adjusted for spatial/regional price differences (deflated by Upper PL) to obtain "real" ginis for each year
2) Absolute Gini for year *t* is normalized by the mean per capita exp. of the *base year* (2000), and *not* by the mean of the distribution of year *t*.

Table A-1.5: Comparison on growth and poverty reduction with some countries in Sub-Saharan Africa and East Asia						
		Years	Annual rate of poverty reduction	Annual growth rate	Growth elasticity*	GDP per capita at the latest year with poverty estimates
Sub-Saharan Africa	Kenya	1994-1997	9.1	0.3	26.4	320
	Burkina Faso	1998-2003	-3.5	1.9	-1.9	247
	Mauritania	1996-2000	-1.7	1.8	-0.9	409
East Asia	China	1990-2001	-8.3	8.8	-1.0	1021
	Thailand	1990-2002	-9.0	3.5	-2.6	2110
	Vietnam	1993-2002	-7.4	5.4	-1.4	444
Bangladesh		2000-2005	-3.9	3.3	-1.2	415

Source: All real per capita GDP data are from WDI (2006) and poverty data for all Sub-Saharan African countries are also from WDI (2006). Information on poverty headcount ratios for East Asian countries comes from: China—Ravallion and Chen (2004); Thailand—Jitsuchon, S. (2004); and Vietnam—Glewwe et al (2000) and Carolyn Turk (2005).
Note: *A crude measure of elasticity – the ratio of annual rate of poverty reduction to annual GDP growth rate.

Table A-1.6: Sectoral decomposition of change in poverty headcount – by division and urban/rural (2000-2005)				
Division/Sector	*Population share*		*Contribution to poverty reduction*	
	2000	*2005*	*Absolute/ percentage points*	*Percentage terms*
Barisal	7.1		-0.1	0.9
Chittagong	20.1		-2.4	26.6
Dhaka	31.4		-4.6	52.4
Khulna	11.7		0.1	-0.8
Rajshahi	23.4		-1.3	14.5
Sylhet	6.4		-0.6	6.2
Total Intra-divisional effect			-8.8	99.8
Population-shift effect			0.0	-0.4
Interaction effect			-0.1	0.6
Rural	79.9	75.3	-6.8	76.5
Urban	20.1	24.7	-1.4	15.3
Total Intra-sectoral effect			-8.1	91.9
Population-shift effect			-0.8	9.0
Interaction effect			0.1	-0.9
Total change in poverty headcount			-8.9	100.0
Source: HIES (2000, 2005)				

Table A-1.7: Inequality in per capita real expenditure (Theil inequality indices for divisions)						
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
2000	0.134	0.140	0.248	0.132	0.135	0.157
2005	0.180	0.173	0.197	0.151	0.135	0.251
% change	*33.9*	*23.6*	*-20.4*	*13.9*	*0.0*	*60.5*
Source: HIES (2000, 2005)						

Table A-1.8: Growth (%) in mean per capita real consumption (2000-2005)					
Divisions	*rural*	*urban-muni*	*SMA*	*urban-all*	*Total*
Barisal	2.9	-3.2	..	-3.2	4.2
Chittagong	4.3	10.7	55.0	36.9	13.1
Dhaka	26.9	11.9	-1.7	0.6	16.7
Khulna	3.5	-3.5	-24.1	-12.1	1.2
Rajshahi	11.0	-14.6	48.4	-5.9	8.7
Sylhet	11.1	62.1	..	62.1	17.3
Total	*12.0*	*3.5*	*6.2*	*4.8*	*11.9*
Source: HIES (2000, 2005) *Note:* Since the data is not representative below division level, these estimates may not be representative and subject to large standard errors.					

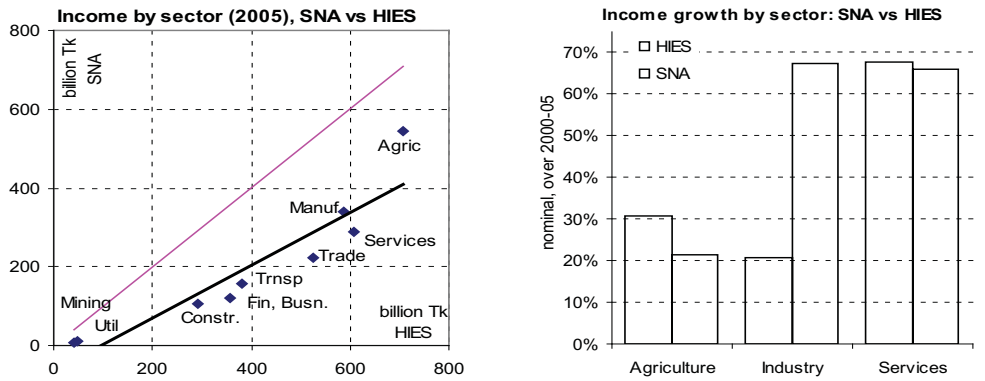
Annex 2: Creating jobs – linking growth and poverty reduction

I. Compatibility of and consistency across different data sets

Information on economic growth is derived from the System of National Accounts (SNA); employment and labor income comes from the HIES; and estimates of poverty are also derived from the HIES, but based on the consumption aggregate rather than the incomes. Therefore, it is appropriate to examine whether: (i) data from different sources are comparable and compatible; (ii) economic growth in national accounts is actually mirrored by income growth in household surveys; and (iii) growth in income in household surveys actually translates into growth in consumption.

For a start, the household surveys for 2000 and 2005 had almost identical questionnaires which results in good intertemporal comparability. However, some problems emerge, which broadly reflect fundamental difficulties that may arise when one applies categories meant for analyzing the labor markets in developed countries to labor markets in developing countries.[1] Major taxonomies used in the surveys, particularly the sectoral classifications, are the same in the SNA and the HIES.

Figure A-2.1: Comparing HIES and SNA



Source: Based on HIES 2000, 2005, SNA (BBS)

The correspondence between household surveys and national accounts is reasonably good. Although the income from the HIES is only 50-55 percent that of SNA (or about 75 percent in the case of private consumption),[2] income shares per sector are very similar (see Annex 2, Figure A-2.1). The dynamics are also comparable. Nominal survey income grew by 40 percent over the five year period compared to 50 percent in the SNA. The correspondence between private consumption growth from the two sources (46 percent and 49 percent, respectively), is even better. At the level of three broad sectors, the correlation of income change is weakened, as the SNA reports much higher growth in manufacturing (see Figure A-2.1).

Prices may play a role as well. Although the consumer price index (CPI) is typically used in this type of analysis, the reporting of actual unit prices in surveys allows the direct computation of

[1] See Box 1.1, World Bank (2008a, draft) for more details.

[2] It is common to find that income/consumption in surveys is typically lower than that from the SNA. The main reason seems to be coverage: whereas the SNA covers more channels, it also estimates aggregates that it cannot directly record, while surveys often suffer from underreporting. Second, it is not uncommon to find diverging dynamics between surveys and the SNA, typically with mean income/consumption from surveys showing a slower growth than the same aggregate from SNA – again due to differences in coverage and measurement errors.

deflators. These survey deflators may differ from deflators applied to macroeconomic aggregates. In the analysis here, the nominal average change in regional poverty lines has been used as a deflator; and poverty lines are adjusted using the average of CPI inflation and survey-derived unit prices. Over 2000-05, these figures come very close (CPI inflation of 23 percent versus 26 percent used in this analysis). Throughout the 1990s however CPI inflation was consistently higher than survey indices.

Finally, growth in income in the HIES may not translate into growth in consumption, owing to, for example, complex saving behavior, unobserved government intervention, and measurement error. Fortunately, income and consumption in the HIES are reasonably consistent. Total consumption is 80-85 percent of income and there is a correlation of 0.8 between (logs of) these variables. Therefore on balance, the Bangladesh data provide a relatively good basis for the analysis linking growth, employment, income, and poverty.

II. Technical notes on decompositions used in chapter

1. Decomposition of growth in income per capita (Section V)

$\Delta i=\Delta w*\Delta h*\Delta e*\Delta a$, where i=I/N, w=I/H, h=H/E, e=E/A, a=A/N, are income per capita, wage (rate), hours worked, employment rate, and share of working population, respectively. Capitalized letters (I, N, H, E, A) indicate totals for the economy

2. Oaxaca-Blinder decomposition of change in women's wages (Section V)

In this case the Oaxaca-Blinder decomposition is $a(w_{f,2005})-a(w_{f,2000})= [a(X_{f,2005})-a(X_{f,2005})]*\beta_{f,2000}+ a(X_{f,2005})*[\beta_{f,2005}+ \beta_{f,2005}]$, where a() stands for average, X for a (vector of) characteristics and f for women. The left expression relates to the contribution of change in characteristics, the right one – to the unexplained component.

3. Decomposition of GDP change by change in employment and productivity (Section VI)

The decomposition is $Y/N=Y/E*E/A*A/N \Rightarrow y=\omega*e*a \Rightarrow \Delta y=\Delta\omega*\Delta e*\Delta a \Rightarrow \omega^C=\Delta\omega/\Delta y$, $e^C=\Delta e/\Delta y$, $a^C=\Delta a/\Delta y$, where Y is total value added, E is total employment, A is total working population, and N is total population. Thus ω corresponds to output per worker ("productivity"), e to the employment rate, a to an (inverse of) the dependency ratio, and ω^C, e^C, a^C to respective contributions.

4. Decomposition of change in productivity by sector (Section VI)

The decomposition is $\omega= \Sigma_i(\omega_i*\varepsilon_i) \Rightarrow \Delta\omega= \Sigma_i\omega^C_i+ \Sigma_i\varepsilon^C_i$, where ω would correspond to productivity (in sector i) and ε_i to a share of employment in sector i. Shapley decomposition is used to arrive at respective additive contributions ω^C_i and e^C_i.

5. Decomposition of poverty reduction into changes in poverty within sector and changes in the share of the people "attached" to each sector (Section VI)

Change in overall poverty is equivalent to $[\Sigma_i N_{i,2005}(P_{i,2005}-P_{i,2000})+ \Sigma_i (N_{i,2005}-N_{i,2000})(P_{i,2005}-P_{2005})]$ where P_t is a poverty headcount for the total population in year t, $P_{i,t}$ is a poverty measure in sector i in year t, and $N_{i,t}$ is the share of poor households "attached" to sector i at time t. The expression on the left corresponds to a poverty reduction within sectors, while that on the right corresponds to a contribution of inter-sectoral changes. A household is "attached" to a sector from which it derives most of its income.

III. Tables referred to in chapter

Table A-2.1: Structure of the Labor Market, 2000-2005

	Share of total employment		Annualized real growth	2005								
				of total labor income		Years of education	Earnings[1]		Hourly rate[2]	Hours worked[3]	Poverty	
	2000	2005		share	growth		median	growth[12]			rate[4]	change
Employment	**100%**	**100%**	**2.8%**	**100%**	**3.7%**	**4.2**	**2,223**	**0.9%**	**11.3**	**47.2**	**38%**	**-9%**
Waged employment[5]	**53%**	**53%**	**3.0%**	**48%**	**5.0%**	**4.3**	**2,200**	**2.0%**	**10.0**	**48.5**	**46%**	**-8%**
Daily labor	**33%**	**32%**	**2.0%**	**19%**	**1.8%**	**1.8**	**1,827**	**[0.3%]**	**9.2**	**43.4**	**60%**	**-8%**
Agriculture	19%	16%	-1.2%	8%	-1.8%	1.3	1,600	-0.3%	8.5	39.6	66%	-7%
Non-agriculture	14%	16%	5.9%	11%	4.8%	2.3	2,200	-0.4%	10.0	47.2	55%	-7%
Salaried	**20%**	**22%**	**4.6%**	**29%**	**7.5%**	**7.8**	**3,378**	**2.4%**	**13.9**	**55.9**	**25%**	**-6%**
Public sector[6]	4%	4%	4.2%	7%	5.4%	10.7	5,654	0.8%	24.2	52.8	9%	-6%
Community sector[7]	3%	4%	6.8%	7%	10.0%	10.5	4,138	1.7%	17.5	52.3	18%	-3%
Private sector	13%	14%	4.1%	15%	7.5%	6.1	2,735	3.4%	10.7	57.8	32%	-6%
Self-employment	**47%**	**47%**	**2.6%**	**52%**	**2.5%**	**4.1**	**2,257**	**[0.0%]**	**13.7**	**45.4**	**29%**	**-10%**
Non-agriculture	**21%**	**20%**	**1.6%**	**31%**	**2.6%**	**5.0**	**3,152**	**[1.0%]**	**13.9**	**54.6**	**28%**	**-10%**
Individual (own account)	12%	11%	0.7%	13%	1.8%	4.2	3,104	[1.0%]	13.7	53.0	35%	-11%
Family[8]	3%	4%	6.1%	3%	8.0%	4.9	2,167	1.6%	10.8	52.2	27%	-18%
Employers[9]	5%	5%	0.5%	15%	2.4%	7.1	5,417	[2.2%]	20.6	60.5	11%	-3%
Agriculture	**27%**	**27%**	**3.4%**	**21%**	**2.4%**	**3.5**	**1,588**	**-0.7%**	**13.6**	**37.9**	**29%**	**-9%**
o/w subsistence[10]	..	..	1.8%	..	-2.4%	3.2	954	-4.1%	8.4	34.8	30%	-13%
Sectors												
Agriculture	51%	46%	0.7%	32%	0.4%	2.8	1,638	-0.2%	10.0	39.4	43%	-1%
Industry[11]	22%	23%	3.9%	27%	2.9%	4.5	2,511	-0.9%	11.3	52.2	37%	-8%
o/w manufacturing	*18%*	*18%*	*2.8%*	*20%*	*2.1%*	*4.8*	*2500*	*-0.6%*	*10.6*	*54.0*	*35%*	*-7%*
o/w construction	*4%*	*5%*	*7.5%*	*5%*	*5.1%*	*3.3*	*2500*	*-2.4%*	*12.5*	*45.4*	*46%*	*-6%*
Services	27%	31%	5.4%	41%	7.4%	6.0	3,167	1.7%	13.5	53.9	31%	-8%

Notes: (1) Tk/month, from all activities; (2) Tk, median, in main activity, i.e. in the activity with the highest earnings; (3) In all activities; (4) Based on consumption and on "upper" poverty line; (5) Job categories in main activity; (6) Government organizations, state owned enterprises, local governments; (7) "Autonomous bodies", NGOs; (8) Household enterprises with two or more members from the households and with no outside employees; (9) Household enterprises employing outside workers; (10) Members of households that derive more than 90 percent of its income from agriculture and consume more than 50 percent of own agricultural production; this is an arbitrarily definition, hence absolute numbers has not been shown; (11) Includes construction; (12) In mean earnings. When growth of mean was of different sign or was different by more than 3 percentage points from that of median, the estimates are presented in brackets.

Sources: Based on HIES 2000, 2005; World Development Indicators

Table A-2.2: Earning Function in Bangladesh, 2000 and 2005

	2000	2005	2005									
			All workers	Daily wage	Salaried job	o/w public sect	Non-agri self-emp	Agricult. self-emp	Men	Women	Urban	Rural
Salaried job			0.335	-	-	-	-	-	0.274	0.474	0.120	0.384
Non-agric. self-empl.			0.416	-	-	-	-	-	0.439	0.281	0.355	0.397
Agriculture self-empl.			-0.284	-	-	-	-	-	-0.177	-1.149	-1.069	-0.191
Age	0.062	0.058	0.057	0.040	0.078	0.060	0.050	0.053	0.062	0.052	0.057	0.056
Age squared	-0.001	-0.001	-0.001	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Woman	-1.113	-0.960	-0.967	-0.849	-0.388	-0.164	-0.908	-1.630	-	-	-0.657	-1.107
Years of education	0.058	0.059	0.050	0.021	0.068	0.065	0.057	0.032	0.047	0.065	0.072	0.038
Muslim[2]	-0.006	0.007	0.020	0.108	0.140	0.168	0.084	-0.214	0.063	-0.129	0.082	0.011
Married	0.088	0.101	0.110	0.129	0.042	0.017	0.137	0.071	0.109	-0.056	0.212	0.059
Public sector job	0.371	0.497	0.347	-	0.241	-	-	-	0.290	0.492	0.162	0.481
Urban job	0.418	0.351	0.187	0.234	0.097	0.057	0.325	-0.396	0.178	0.133	-	-
Regional dummies.	*output suppressed[3]*											
R2	0.347	0.295	0.344	0.282	0.455	0.427	0.299	0.256	0.283	0.398	0.428	0.293

Notes: (1) Coefficients from regression of log monthly earnings from main employment/activity are not corrected for potential selection bias; (2) All coefficients listed are statistically significant at 1percent, except "Muslim" – which is not significant anywhere, except in salaried jobs and in urban areas and for men – at 5 percent; (3) The typical values for regional dummies found in the above regressions are : Barisal (0 – base category), Chittagong (+19%), Dhaka (+4%), Khulna (-3%), Rajshahi (-8%), Sylhet (+10%). It is worth mentioning that these regional wage premiums are strongly correlated with regional poverty rates.

Table A-2.3: East-West differences in earning function

	Nationwide		2005	
	2000	**2005**	**East**	**West**
Age	0.061	0.054	0.054	0.056
Age^2	-0.001	-0.001	-0.001	-0.001
Gender	-1.054	-0.878	-0.810	-1.017
Years educ.	0.060	0.061	0.065	0.054
Muslim	0.006	0.003	0.012	-0.019
Married	0.094	0.102	0.076	0.141
Public sect.	0.352	0.449	0.362	0.650
Urban	0.416	0.327	0.433	0.095
West	-0.178	-0.178	-	-
_constant	7.099	7.248	7.179	7.204

Note: (1) Coefficients from regression of log monthly earnings from main employment/activity (not corrected for potential selection bias); All coefficients listed are statistically significant at 1percent, except "Muslim" , which is not significant
(2) The coefficients for nationwide regressions are slightly different from those in Table A-2.2 because the regional dummies are different here (a dummy for "west" instead of the divisional dummies in Table 2.2).

Annex 3: Profiling the Poor: Characteristics and Determinants of Poverty

I. Determinants of poverty from multivariate regressions

The model

1. The model specification follows Ravallion and Wodon (1999) (henceforth R-W) to a large extent, which involves estimating separate regressions between urban and rural samples, with district dummies in each regression. This implies that the coefficients are constant within each urban and rural sample, but each district may have different intercepts, captured by the district dummies. The econometric model can be written as follows.

(1) $Y_i = \alpha_U + X_i\beta_U + D_i\delta_U + \varepsilon_{Ui}$; (2) $Y_i = \alpha_R + X_i\beta_R + D_i\delta_R + \varepsilon_{Ri}$

2. Y is natural logarithm of per capita consumption, X represents household attributes, and D denotes dummy variables for each district, following the old classification of districts (old *zillas)*. The classification of old districts/*zillas* – as opposed to the "new" districts – is retained for two reasons. *Firstly*, this allows for a direct comparison with R-W results that are based on HES 1991-92 and 1988 – useful to infer indirectly the long-term dynamic changes in the correlates of consumption poverty. *Secondly*, if the current classification (64 new districts/*zillas* instead of 17 old *zillas*) were used, the number of location/district dummies in the regression would become so large as to make interpretation of the results difficult; and the number of households in each location would be too small to yield statistically significant effects of district dummies. Note that the classification of districts is used here just to estimate the effect of location attributes by some criterion of geographic disaggregation. In this context, whether the particular unit of analysis captures current administrative arrangements is less important, as long as this unit remains unchanged over time.

3. Equation (1) and (2) are estimated separately with ordinary least squared (OLS), where standard errors are corrected for cluster effect within district. The equations take a linear form. The Basic Model—model (1) and model (3) in Table A-6, Annex—are the baseline specifications for rural and urban samples respectively. All the independent variables are the same with the exception that the rural sample includes the number of livestock. In models (2) and (4), local area attributes are added – going beyond the specification of R-W – to see the relative importance of specific characteristics of geographic areas as correlates of poverty (these regressions are referred to in chapter 4 of the report).

The variables in the regressions

4. *The dependent variable* in these regressions is the natural log of per capita household consumption. This variable is the sum of food and non-food expenditures (excluding durable goods) and is expressed in real terms by adjusting for spatial price differences using the upper poverty lines.

5. *Independent variables*. The full set of regressors can be found in Table A-6, Annex; they include the number of infants, children and adults in a household, gender, marital status, age, religion, education level and occupation of household head, education level of the household head's spouse and agricultural land owned by the household. The difference between the education of head (or of spouse) and the maximum education in the household is added to capture potential gains from higher education among other members of the family. All the above variables are identical to those used in the specification of R-W, with the *exception of the occupation variables*, where the differences are due to changes in the occupation codes between

surveys.[1] Variables that combine types of employment (self-employed, salaried, daily wage, etc.) with sector of employment (agriculture and non-agriculture) are used instead in our regressions.

6. In addition to the above, 16 dummy variables are included – one for each (old) district, with Dhaka being the omitted or reference district – to capture the location effects on household consumption. This list of location dummies is identical to the R-W specification (see Table A-4, Annex for a full list of location dummies and how the old districts map on to current districts).

7. Other independent variables included here – and not present in the R-W specification – are the number of non-farm enterprises in a household and dummies for households that receive domestic and international remittances. In addition, as mentioned above, the specifications for the rural samples include the number of chicken and cattle owned by the household. These variables are included to take into account the potential effect of a few key household attributes– remittances are often claimed to play an important role in household consumption, the ability to diversify into nonfarm enterprises may be associated with lower poverty, and ownership of livestock may enhance incomes and enable consumption-smoothing at the time of shocks.

8. The *omitted dummies define a reference household*, which is characterized as a married Muslim couple, who are landless, childless, have no education and are living in Dhaka district. Other members of the reference household are also illiterate. The head of the household is engaged in farming (self-employment in agriculture), and the household does not receive any remittances, either domestic or abroad.

9. In models (2) and (4), additional location characteristics are added to the specifications of (1) and (3) – the travel times to Dhaka, *zilla* headquarter, and *thana* headquarter (from HIES community survey); percentage of households in *thana* with electricity connection and percentage owning agricultural land (from the Population Census, 2001). These variables attempt to capture broad indicators of availability of infrastructure, access to markets and the size of the nonfarm sector in a particular location. In addition, two location-specific variables related to access to microfinance derived from the PKSF database (see Section II) are also included. These are (i) the coverage of microfinance at the *thana* level and (ii) the increase in microfinance coverage from 2003 to 2005 at the *thana* level. The objective is to see what patterns of correlation emerge between these indicators and household consumption/poverty, and how these results can be interpreted given the limitations of a single-shot, cross-section type analysis.

II. The impact of adjustments for economies of scale in household consumption on poverty correlates

To examine the sensitivity of poverty correlates to household composition and scale effects (following Annex 1), the number of adult equivalent members for each household is defined by $AE = (A + s.C)^t$; where A is the number of adults, C is the number of children (below age 18) in the household, the parameter s is the expenditure on a child relative to that on an adult; and the parameter, t (between 0 and 1), measures economies of scale. When t is set to unity, the expenditure measure does not adjust for household size. Total household expenditure for each household is then divided by AE to arrive at an adjusted adult equivalent expenditure for the household, which is then compared to the poverty lines to identify poor households.

[1] The occupation variables used in R-W are (i) agricultural worker with land; (ii) fishery/forestry/livestock worker; (iii) tenant farmer; (iv) owner farmer; (v) servant and day-laborer; (vi) transportation and communication; (vii) salesman, broker, middleman, etc; (viii) factory worker, artisan, petty trader, small businessman, executive official, professors, teacher; and (ix) retired person, student, non-working.

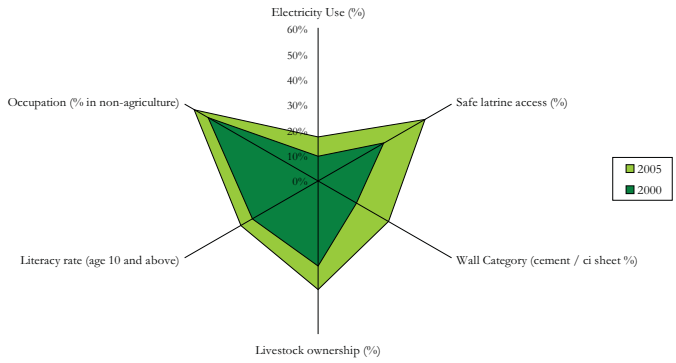
For the purpose of this analysis, since economies of scale are the area of focus, *s* is set at 1 while *t* is set at 0.8 and 0.9 (see Annex 1 for a rationale of why taking a value of t close to 1 is appropriate). Table A shows that the poor have a larger household size and number of (and proportion of) dependents than the nonpoor for both parameter values of t. Proportion of female headed households is identical for poor and nonpoor households when t=0.9, but significantly higher for poor households when t=0.8. Therefore, as the size of the economies of scale in consumption increases, female-headed households appear to be at a greater disadvantage relative to male-headed households.

Table A

	s=1, t=0.9				**s=1, t=0.8**			
	Poor		Non-poor		Poor		Non-poor	
	2000	2005	2000	2005	2000	2005	2000	2005
Household Size	5.3	5.1	5.1	4.8	5.0	4.8	5.2	4.9
Dependency Ratio	1.06	0.97	0.65	0.61	1.09	1.02	0.71	0.65
Number of children	2.5	2.3	1.8	1.6	2.5	2.3	2.0	1.7
Number of Male Adults	1.3	1.3	1.7	1.6	1.2	1.2	1.7	1.6
Number of Female Adults	1.4	1.4	1.6	1.6	1.4	1.4	1.6	1.6
Head female	0.10	0.10	0.08	0.10	0.12	0.13	0.08	0.10

III. Figures and tables referred to in the main text

Figure A-2.1: Non-Expenditure Welfare indicators of bottom 3 deciles between 2000 and 2005



Source: HIES 2000, 2005

Table A-3.1: Regressions of log of per capita consumption, 2005

	(1) Rural-Basic	(2) Rural-Extended	(3) Urban-Basic	(4) Urban-Extended
Mymensingh	-0.108	-0.014	-0.114	-0.065
	(12.96)**	(0.49)	(11.83)**	(1.62)
Faridpur	-0.072	-0.004	-0.062	-0.042
	(8.24)**	(0.16)	(7.16)**	(0.89)
Tangail/Jamalpur	-0.236	-0.152	-0.269	-0.180
	(30.45)**	(6.86)**	(24.03)**	(4.02)**

Chittagong	-0.045	0.108	-0.027	-0.025
	(3.72)**	(2.11)	(2.93)**	(0.84)
Comilla	-0.069	-0.014	-0.130	-0.094
	(10.76)**	(1.03)	(13.08)**	(2.64)*
Sylhet	0.017	0.068	-0.066	-0.109
	(1.70)	(1.78)	(6.76)**	(2.35)*
Noakhali	-0.274	-0.212	-0.086	-0.056
	(6.21)**	(5.68)**	(2.54)*	(1.04)
Khulna	-0.276	-0.138	-0.416	-0.397
	(28.96)**	(5.08)**	(54.34)**	(20.98)**
Jessore	-0.281	-0.149	-0.334	-0.267
	(24.37)**	(4.66)**	(55.95)**	(5.59)**
Barisal/Patuakhali	-0.358	-0.140	-0.226	-0.153
	(36.47)**	(2.85)*	(27.68)**	(4.25)**
Kushtia	-0.041	0.032	0.135	0.205
	(7.46)**	(1.42)	(14.02)**	(5.70)**
Rajshahi	-0.287	-0.169	-0.255	-0.199
	(19.97)**	(5.85)**	(16.00)**	(5.81)**
Rangpur	-0.318	-0.226	-0.328	-0.264
	(46.62)**	(8.05)**	(30.57)**	(5.55)**
Pabna	-0.242	-0.197	-0.309	-0.255
	(13.84)**	(7.41)**	(19.51)**	(5.52)**
Dinajpur	-0.252	-0.109	-0.321	-0.199
	(25.40)**	(3.40)**	(35.93)**	(4.24)**
Bogra	-0.248	-0.156	-0.316	-0.260
	(26.83)**	(6.68)**	(30.85)**	(5.98)**
Number of infants	-0.202	-0.209	-0.421	-0.406
	(3.59)**	(4.16)**	(3.27)**	(3.00)**
Number of infants squared	0.034	0.038	0.277	0.269
	(0.66)	(0.84)	(2.32)*	(2.13)*
Number of children	-0.178	-0.177	-0.180	-0.178
	(14.80)**	(14.06)**	(13.34)**	(13.15)**
Number of children squared	0.014	0.013	0.012	0.011
	(6.01)**	(5.35)**	(4.79)**	(4.62)**
number of adult	-0.104	-0.109	-0.142	-0.138
	(7.77)**	(7.87)**	(6.93)**	(7.05)**
number of adult squared	0.008	0.008	0.012	0.011
	(5.75)**	(5.56)**	(5.64)**	(5.31)**
head female	-0.015	-0.030	-0.148	-0.149
	(0.34)	(0.62)	(3.02)**	(3.09)**
Head:married, no spouse present	0.097	0.100	0.350	0.345
	(3.15)**	(2.68)*	(6.99)**	(6.78)**
Head:single, no spouse present	0.108	0.090	0.240	0.186
	(1.97)	(1.71)	(3.62)**	(4.08)**
Head:divorced, widowed, separated, no spouse present	-0.041	-0.033	0.160	0.166
	(1.14)	(0.84)	(2.45)*	(2.60)*
Head age	0.016	0.015	0.020	0.020
	(7.05)**	(5.95)**	(10.19)**	(9.47)**
Head age squared	-0.000	-0.000	-0.000	-0.000
	(6.77)**	(5.45)**	(8.39)**	(7.34)**

Head non-muslim	-0.093	-0.065	-0.107	-0.093
	(2.80)*	(3.16)**	(3.34)**	(2.86)*
Level of Head's edu: Below class 5	0.138	0.128	0.155	0.155
	(4.33)**	(4.69)**	(4.70)**	(4.19)**
Level of Head's edu: Class 5	0.131	0.128	0.193	0.192
	(8.91)**	(7.65)**	(11.19)**	(10.17)**
Level of Head's edu: Class 6 to 9	0.191	0.169	0.313	0.308
	(10.28)**	(10.44)**	(10.78)**	(11.01)**
Level of Head's edu: Higher Level	0.305	0.273	0.467	0.458
	(13.66)**	(14.71)**	(10.39)**	(10.41)**
Level of Spouse's edu: Below class 5	0.066	0.060	0.143	0.140
	(2.68)*	(2.51)*	(4.36)**	(4.12)**
Level of Spouse's edu: Class 5	0.045	0.046	0.114	0.117
	(2.66)*	(2.32)*	(5.41)**	(5.16)**
Level of Spouse's edu: Class 6 to 9	0.112	0.101	0.239	0.239
	(4.17)**	(3.53)**	(9.86)**	(9.30)**
Level of Spouse's edu: Higher Level	0.296	0.284	0.439	0.437
	(6.65)**	(6.53)**	(9.18)**	(9.52)**
Difference b/w head and max edu: 1 level	0.088	0.076	0.111	0.110
	(5.83)**	(4.76)**	(4.03)**	(4.11)**
Difference b/w head and max edu: 2 level	0.102	0.086	0.122	0.119
	(5.57)**	(5.56)**	(4.75)**	(4.15)**
Difference b/w head and max edu: 3 level	0.135	0.120	0.226	0.216
	(7.04)**	(6.28)**	(8.29)**	(9.89)**
Difference b/w head and max edu: 4 level	0.159	0.145	0.341	0.315
	(4.77)**	(4.74)**	(6.37)**	(8.09)**
Functionally Landless:0.05-0.49	0.072	0.082	0.008	0.006
	(4.28)**	(6.01)**	(0.37)	(0.22)
Marginal:0.5 to 1.5	0.148	0.173	0.082	0.100
	(8.61)**	(11.12)**	(3.21)**	(4.64)**
Small:1.5 to 2.5	0.269	0.299	0.190	0.206
	(7.07)**	(8.12)**	(4.31)**	(4.72)**
Medium&Large:2.5 or more	0.419	0.476	0.319	0.327
	(11.83)**	(15.79)**	(8.78)**	(9.05)**
Head's major activity: self-employment:non-agriculture	0.035	0.034	0.100	0.102
	(1.66)	(1.52)	(2.26)*	(2.27)*
Head's major activity: Daily wage employment	-0.058	-0.059	-0.023	-0.021
	(3.60)**	(3.88)**	(0.80)	(0.67)
Head's major activity: Salary wage employment	0.015	0.004	0.038	0.036
	(0.62)	(0.18)	(1.48)	(1.29)
Head's major activity: None	0.024	0.018	0.073	0.077
	(1.14)	(1.02)	(1.73)	(1.84)
Number of non-farm enterprises	0.071	0.062	0.079	0.076
	(3.79)**	(3.22)**	(2.83)*	(2.79)*
HH receives domestic remittances-dummy	0.091	0.078	0.107	0.109
	(2.45)*	(2.94)**	(3.16)**	(3.32)**
HH receives remittances from abroad-dummy	0.252	0.222	0.310	0.302
	(5.13)**	(6.10)**	(4.88)**	(4.47)**
number of cattle	0.004	0.005		
	(1.79)	(1.86)		

number of chicken	0.001	0.001		
	(3.10)**	(3.15)**		
Travel time to thana HQ ('00 mins)		-0.032		
		(2.33)*		
Travel time to district HQ ('00 mins)		-0.003		
		(2.25)*		
Travel time to Dhaka HQ ('00 mins)		-0.036		
		(3.22)**		
% of HH with electric connection		0.001		0.000
		(1.30)		(0.54)
% of HH own agricultural land		-0.003		-0.000
		(1.74)		(0.06)
Coverage of micro finance in Thana in 2005		-0.001		-0.002
		(1.10)		(2.51)*
Change in microfinance members between 03-05		0.002		0.001
		(4.07)**		(1.15)
Constant	6.858	7.024	6.668	6.696
	(97.77)**	(48.49)**	(94.25)**	(47.45)**
Observations	6371	5874	3660	3600
R-squared	0.48	0.50	0.56	0.56

Absolute value of t statistics in parentheses; * significant at 5%; ** significant at 1%

Table A-3.2: Oaxaca decomposition of increase in per capita real consumption between 2000 and 2005: summary results

	Rural			Urban		
	endowments	coefficients	interaction	endowments	coefficients	interaction
Geographic dummies	-0.002	0.032	0.006	-0.033	0.014	0.017
Household size variables	0.032	0.059	-0.003	0.031	0.012	0.000
Other demographic variables	-0.002	0.220	0.002	-0.001	0.157	-0.004
Education variables	0.023	-0.019	-0.005	0.042	-0.089	-0.008
Land variables	0.000	0.025	0.000	0.020	0.001	0.003
Occupation variables	0.006	0.030	-0.008	-0.035	0.059	0.057
Number of non-farm enterprises	-0.004	-0.003	0.000	-0.002	0.008	-0.001
Remittances	0.004	0.009	0.001	-0.001	0.036	0.000
Livestock	0.003	-0.021	-0.002			
Constant	0	-0.275	0	0	-0.255	0
Total*	0.061	0.058	-0.008	0.022	-0.058	0.065

Source: Kotikula, Narayan and Zaman (2007), using HIES (2000, 2005)
*The total for each column may not exactly match the sum of rows due to rounding off.

Annex 4: Lagging regions in Bangladesh: is there an East-West economic divide?

I. Explaining location effects by including location characteristics in regressions[i]

Columns (2) and (4) of Table A-3.1 (Annex 3) list the coefficients for the "extended" regressions –adding location characteristics for the rural and urban sample respectively to the specifications in columns (1) and (3). These represent some of the characteristics of a geographic location likely to influence its economy, and for which data is available from reliable sources. The variables added for the rural regression are the travel times to Dhaka, the district headquarter, and *thana* headquarter (from HIES community survey), percentage of households in thana with electricity connection, and percentage owning agricultural land (from population Census, 2001). Since the Census was fielded in 2001, these variables can be interpreted as indicators of the initial condition of development in each Thana. The urban regressions include all the Census variables but not travel times, since these were not available for urban areas. Two location-specific variables related to access to microfinance derived from the PKSF database are included: (i) the effective rate of coverage of microfinance at the *thana* level and (ii) the increase in microfinance coverage from 2003 to 2005 at the thana level.

The coefficients of these variables are subject to important caveats: (i) the likelihood of measurement errors in the indicators from the HIES community survey in particular, (ii) possible multicollinearity between variables as variables may be interconnected, and (iii) the likely biases caused by the omission of potentially important location attributes due to lack of data. Additional caveats apply to the microfinance variables (see below). Given these caveats, and the natural limitations of the cross-section data, the coefficients of the regressions should be interpreted to represent correlates of household consumption, rather than its determinants.

The variables related to travel times to different markets are significant correlates of consumption for rural households. Electricity coverage and agricultural land ownership (as a proxy for the size of the non-farm sector) have marginal effects on rural consumption and none for urban households. Perhaps most importantly, adding the location characteristics reduces the size of the location effects represented by the coefficients of the district dummies for most districts, in urban and rural samples alike (see Table A-3.1, Annex 3). While 15 out of 16 districts had significantly negative effects on household per capita consumption in the rural regressions in the absence of location characteristics, nine districts had so after adding the location characteristics. For urban areas, location characteristics play a smaller role in explaining the district level location effects – the size and significance of most location effects become smaller, but are still significant for 11 out of 16 districts, compared to fifteen originally.

II. Spatial gaps in returns to household attributes – motivation for the empirical exercise[ii]

Existing literature offers two broad explanations for the persistence of spatial gaps in returns to observed household attributes over the entire income distribution in the presence of free factor mobility. First, in econometric estimation, return to same household attribute can be found to be significantly different across locations if heterogeneity across households and locations are not adequately controlled for. Existing literature identifies at least three such sources of *unobserved* household and location heterogeneity. According to standard location sorting model à la Roy (1951), households are sorted across regions in terms of both observed and unobserved characteristics. For instance, while educational attainment is observed, ability of an individual

[i] See Kotikula et al (2007) for more detailed results.
[ii] From Shilpi (2008). See the paper for all details on the econometric estimation, results and their interpretations.

household member is unobservable. Because of selective migration of workers with higher ability to urban areas, an individual in an urban area would earn higher wage compared to an observationally identical individual located in a rural area. In addition to ability sorting, agglomeration economies arising from increasing returns, labor market externalities, and knowledge spillovers can also cause wages in densely populated areas and in technologically advanced sectors to be higher (Fujita et al, 1999; Overman et al, 2007). Moreover, if public infrastructure has production externality, then workers in regions with better access to markets and better infrastructure could enjoy higher wages relative to those located in other regions (Ravallion and Jalan, 1999; Jalan and Ravallion, 2002). The omitted variable biases resulting from the inability to control for spatial sorting of unobserved household and locational characteristics do not however apply to all households and all locations equally. The ability sorting and agglomeration economies may affect wages in sectors which are technology and innovation intensive. Evidence from developing countries suggests that only a small fraction of activities in urban centers fit such categorization (Fafchamps and Shilpi, 2005). Similarly, because of predominance of agricultural activities, the differences in rates of returns between rural areas across locations are more likely to be due to differences in public capital and access to markets.

The spatial differences in rates of return to attributes can also be sustained in equilibrium if migration is costly (Dahl, 2002; Bayer et al, 2007; Kanbur and Rapoport, 2005). The cost of migration tends to vary across individuals and households as they face different level of risks and costs. The migration costs are likely to be higher for poorer and middle income households who face credit constraints as well as higher opportunity costs of disposing of existing assets. Various costs associated with migration are likely to pose no serious hindrance to mobility of members of well-off households. Similarly, short-term migration such commuting and temporary migration of a member of the household involves less costs than long-term and permanent migration of the entire household. Proximity can also influence formation of migration network and through it migration flows in subsequent periods (Kanbur and Rapoport, 2005). As a result, the difference in returns to household attributes will be smaller across areas in close proximity to each other.

Both locational sorting and migration literature thus suggests that returns to observed household attributes will vary across households depending on their position in the welfare distribution and across regions depending on their relative proximity and locational characteristics. In Shilpi (2008), the returns to observed household attributes are estimated using the Machado and Mata (2005) quantile regression based decomposition technique, with data from two rounds of HIES (2000 and 2005) of Bangladesh. The regional gaps in welfare in the empirical analysis –measured by the difference in the distribution of the log of real per capita consumption expenditure –are decomposed into a "sorting" effect arising due to differences in *observable* household characteristics, and a returns effect resulting from differences in rate of returns to those characteristics.

Bangladesh provides an excellent case to study the roles of different factors in explaining spatial differences in returns for several reasons. First, there are no administrative restrictions on migration in Bangladesh. As much of the Bangladesh's population share the same ethnicity, religion and language, there exists no serious ethnic or cultural barriers to internal migration. Despite absence of serious barriers to labor mobility, Ravallion and Wodon (1999) has shown that both sorting and returns effects are important in explaining average regional gaps in welfare in Bangladesh.

III. Interpreting the "return gaps" for households at different parts of the distribution[iii]

Migration would typically tend to equalize returns to endowments across regions, but also has associated costs that may deter the mobility of the poor. As migration costs are unlikely to seriously impede the mobility of better-off households, substantial IR-LIR gaps in returns for upper quantile households suggests "sorting" (across space) by *unobserved* attributes of households and economic activities. However, such sorting is more likely to take place in urban areas of IR, given that activities that require better individual attributes and are subject to agglomeration economies usually concentrate in urban areas. Given the predominance of agricultural activities in rural areas, any differences in rates of returns for better-off households across rural areas in IR and LIR are more likely due to differences in public capital and access to markets. For the upper quantiles of rural IR and LIR, the return effects are statistically significant and explain a third or more of the rural IR-LIR gap in expenditures (Figure A-4.7). This suggests that differences in infrastructure, access to markets, and other public capital are important factors behind IR-LIR gaps in returns to observed household attributes.

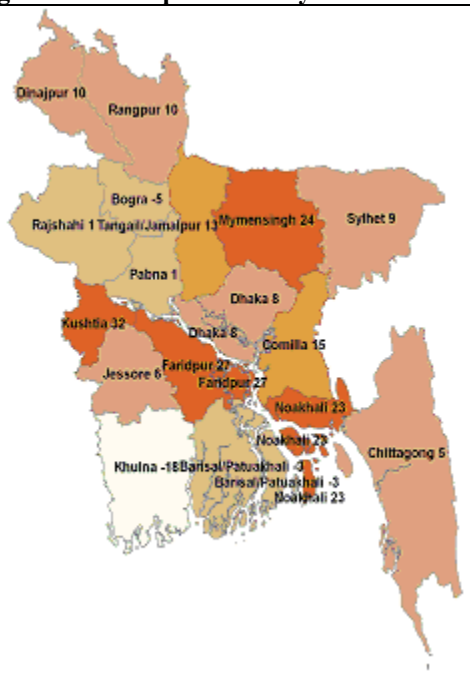
At the same time, the differences in returns between rural IR and rural LIR are smaller than those between IR and LIR for the upper quantiles, which indicates some degree of sorting –of household with unobserved better characteristics and of agglomeration forces – in the urban areas of IR. This is also suggested by significant urban-rural differences in returns within each region for households in the top 40 percent (Figures A-4.8 and 4.9). This gap has increased significantly for IR between 2000 and 2005 while remaining unchanged for LIR, which suggests that the main metropolitan areas in IR have experienced higher growth of economic activities than the rest of the country.

The significant IR-LIR gaps in returns for poorer households on the other hand are consistent with the poor facing higher costs of migration. There are no significant urban-rural differences in returns for poor households within each region (Figures A-4.8 and A-4.9), which seems to indicate no serious barrier to mobility of the poor within a region. However, decomposition of the gaps in per capita expenditures between the urban areas of IR and rural areas of LIR suggests substantial differences in returns for poorer households (Figure A-4.10). This seems to suggest substantial costs of migration from LIR to IR – likely on account of the mighty rivers separating these regions that make temporary migration and commuting difficult.

[iii] From Shilpi (2008). See the paper for more details.

IV. Figures and tables

Figure A-4.1 Maps of Poverty Reduction in Bangladesh between 2000 and 2005: Old *zilla* level



a. Poverty reduction between 2000 and 2005 (percentage points)

Note: Numbers in map indicate difference between 2000 and 2005 poverty rates; darker color denotes higher difference.

b. Current divisional boundaries– for comparison with the old *zilla* boundaries

Figure A-4.2: Comparing old and new district boundaries

Note: Grey lines show boundary of new *zilla*.

Figure A-4.3: Microfinance membership in 2003 by old districts

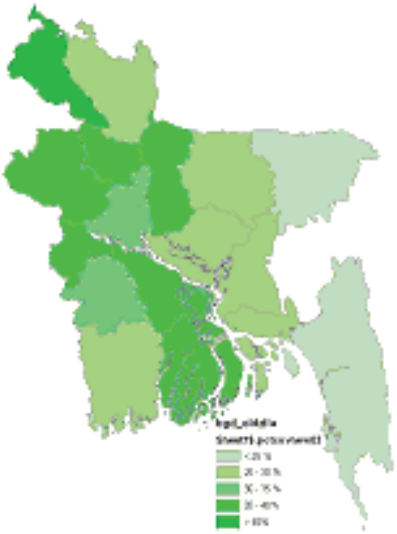
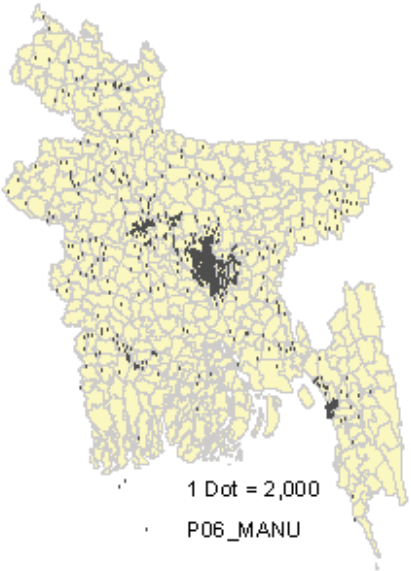


Figure A-4.4: Increase in microfinance membership (2003-2005)

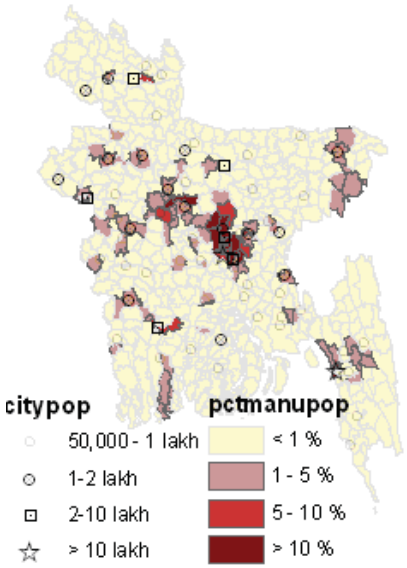
Note: Increase in membership refers to % change in members in (old) district between 2003 and 2005.
Source: PKSF data (2003, 2005)

Figure A-4.5: Concentration of agro-processing industries (2006)



Note: Employment in all firms with 10+ Total Persons Employed (TPE). 1 dot represents 2000 workers. Dots are randomly placed within each *upazilla.*
Source: Economic Census (2006); Population Census (2001)

Figure A-4.6: Employment in manufacturing (2006)



Note: Symbols show cities by population size in 2001. Only cities of more than 50,000 persons are shown. Darker areas show high rate of employment (compared to total population).

Figure A-4.7: Return Effects for Rural IR-Rural LIR Gaps (2000 and 2005)

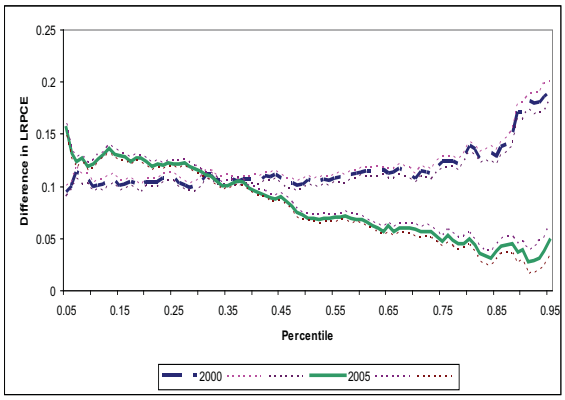


Figure A-4.8: Return Effects for Urban-Rural Gaps in IR (2000 & 2005)

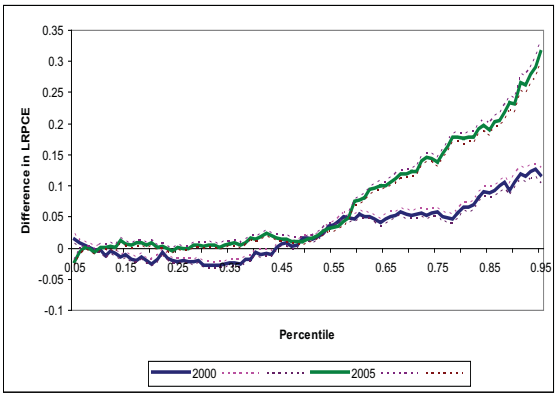


Figure A-4.9: Return Effects for Urban-Rural Gaps in LIR (2000 & 2005)

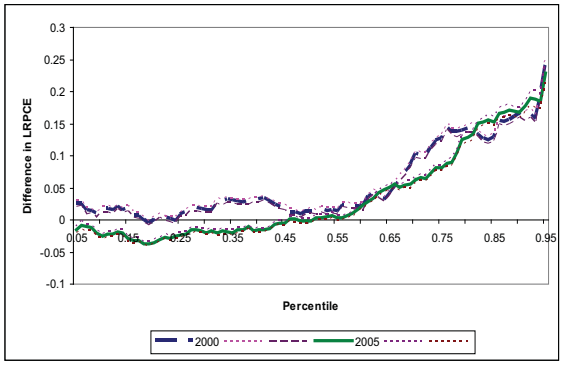
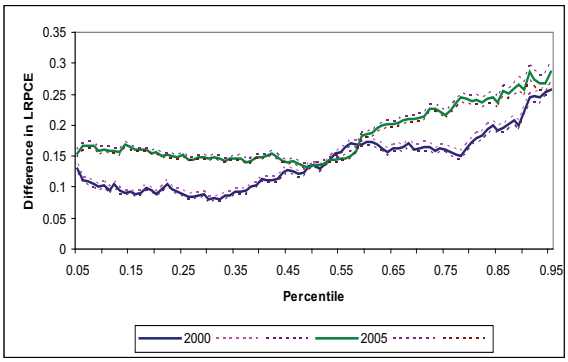


Figure A-4.10: Return Effects for Urban I - Rural LI Gaps (2000 & 2005)



Source: Shilpi (2008) using HIES (2000 and 2005)

Table A-4.1: Mapping location dummies (old districts) to new districts

Old districts	New districts					
Mymensingh	Mymensingh	Netrokona	Kishoreganj			
Faridpur	Faridpur	Madaripur	Shariatpur	Rajbari	Gopalganj	
Tangail/Jamalpur	Tangail	Jamalpur	Sherpur			
Chittagong	Chittagong	Khagrachhari	Rangamati	Cox's Bazar	Bandarban	
Comilla	Comilla	Brahmanbaria	Chandpur			
Sylhet	Sylhet	Sunamganj	Habiganj	Moulvibazar		
Noakhali	Noakhali	Feni	Lakshmipur			
Khulna	Khulna	Satkhira	Bagerhat			
Jessore	Jessore	Jhenaidah	Magura	Narail		
Barisal/Patuakhali	Barisal	Pirojpur	Jhalokathi	Bhola	Patuakhali	Barguna
Kushtia	Kushtia	Meherpur	Chuadanga			
Rajshahi	Rajshahi	Natore	Naogaon	Nawabganj		
Rangpur	Rangpur	Nilphamari	Lalmonirhat	Kurigram	Gaibandha	
Pabna	Pabna	Sirajganj				
Dinajpur	Dinajpur	Thakurgaon	Panchagarh			
Bogra	Bogra	Joypurhat				
Dhaka	Dhaka	Narayanganj	Munshiganj	Manikganj	Gazipur	Narsingdi

Table A-4.2: Location effects of (old) district dummies relative to that of Dhaka district

		Rural			Urban		
"Old" districts	*Divisions*	*2000*	*2005*	*Chow Test*	*2000*	*2005*	*Chow Test*
Mymensingh	Dhaka	-0.305	-0.108	0.199	-0.208	-0.114	0.101
		(43.33)**	(12.96)**	(32.01)**	(13.75)**	(11.83)**	(12.28)**
Faridpur		-0.357	-0.072	0.292	-0.323	-0.062	0.235
		(56.43)**	(8.24)**	(31.96)**	(26.57)**	(7.16)**	(15.22)**
Tangail/Jamalpur		-0.377	-0.236	0.126	-0.019	-0.269	-0.228
		(50.11)**	(30.45)**	(24.45)**	(1.32)	(24.03)**	(18.60)**
Comilla	Chittagong	-0.070	-0.069	0.015	-0.077	-0.130	-0.032
		(15.39)**	(10.77)**	(4.23)**	(9.64)**	(13.08)**	(4.49)**
Chittagong		-0.041	-0.045	-0.008	-0.104	-0.027	0.087
		(5.65)**	(3.72)**	(0.69)	(18.02)**	(2.93)**	(14.00)**
Noakhali		-0.190	-0.274	-0.040	-0.305	-0.086	0.261
		(19.71)**	(6.22)**	(1.66)	(34.11)**	(2.54)*	(16.26)**
Sylhet	Sylhet	-0.022	0.017	0.046	-0.151	-0.066	0.115
		(3.77)**	(1.70)	(8.21)**	(13.34)**	(6.76)**	(10.57)**
Khulna	Khulna	-0.064	-0.276	-0.233	-0.315	-0.416	-0.098
		(5.94)**	(28.98)**	(39.78)**	(51.03)**	(54.34)**	(24.27)**
Jessore		-0.275	-0.281	-0.008	-0.365	-0.334	0.082
		(33.97)**	(24.38)**	(1.45)	(34.77)**	(55.95)**	(8.02)**
Kushtia		-0.242	-0.041	0.196	-0.378	0.135	0.535
		(30.91)**	(7.46)**	(27.37)**	(27.08)**	(14.02)**	(39.60)**
Barisal/Patuakhali	Barisal	-0.270	-0.358	-0.091	-0.141	-0.226	-0.066
		(47.47)**	(36.52)**	(13.88)**	(17.32)**	(27.68)**	(10.92)**
Rajshahi	Rajshahi	-0.237	-0.287	-0.058	-0.267	-0.255	0.071
		(26.96)**	(19.99)**	(5.35)**	(33.29)**	(16.00)**	(4.49)**
Rangpur		-0.424	-0.318	0.096	-0.434	-0.328	0.119
		(53.45)**	(46.60)**	(20.73)**	(63.20)**	(30.57)**	(18.73)**
Pabna		-0.265	-0.242	0.015	-0.055	-0.309	-0.219
		(39.97)**	(13.85)**	(1.21)	(4.18)**	(19.51)**	(10.70)**
Dinajpur		-0.332	-0.252	0.060	-0.523	-0.321	0.243
		(26.71)**	(25.40)**	(12.97)**	(36.38)**	(35.93)**	(24.71)**
Bogra		-0.219	-0.248	-0.047	-0.097	-0.316	-0.211
		(25.07)**	(26.82)**	(6.51)**	(8.61)**	(30.85)**	(20.00)**

Note: 1) Basic specifications of rural and urban regressions (Columns 1 and 3, Table A-3.1, Annex 3) are used;
2) **: significant at 1% level;
3) The coefficients corresponding to each (old) district in the Chow Test columns indicate the reduction in gap between Dhaka and the respective district from 2000 to 2005; these are coefficients of the interaction terms between district dummies and dummy for 2005 in the model where both years are pooled.[iv] A positive and significant coefficient indicates *reduction* in the location effect of that district or reduction in its gap with Dhaka; and conversely for a negative and significant coefficient.
4) Shaded cells refer to districts for which the gap with Dhaka district has *increased* significantly.
Source: HIES 2000, 2005

[iv] The regression model is: $Y = \alpha + X\beta_1 + \beta_2 D(year = 2005) + Z_k\beta_3 + D(year = 2005)Z_k\beta_4 + \varepsilon$, where Y is log of real per capita consumption, X is other control variables, and Z is district dummies. β_4 is presented in column (3).

Table A-4.3: Trend of Micro finance coverage		
	2003	**2005**
Number of members: BRAC	3,341,325	4,289,969
Number of members: ASA	2,071,486	4,180,157
Number of members: Grameen	2,786,748	4,881,444
Number of members: Total	*12,866,585*	*21,731,043*
Share of 3 major MFIs (%)	63.7	61.4
Effective rate of coverage (% of households)	31.1	51.1
Note: 1) Total number of members also includes members of the smaller providers; 2) effective rate of coverage is the estimated number of microfinance households divided by the projected total number of households *Source:* PKSF (2005)[v]		

[v] The effective rate of coverage is the estimated number of microfinance households divided by the total number of households. Due to multiple memberships within households, the number of microfinance households is estimated to be 66 percent of total number of members (see World Bank, 2006a). The total number of households is projected from Census 2001, assuming an annual population growth of 1.5 percent.

Annex 5: Creating human capital: bridging the access and quality gap

Table A-5.1: Malnutrition versus income across countries with comparable levels of income

Sub-Saharan African countries of similar income levels	GDP per capita (constant 2000 US$)	Malnutrition: weight for age (% of children under 5)
Tanzania	335	16.7
Zambia	371	23.3
Comoros	379	25.0
Guinea	406	22.5
Bangladesh	419	47.5
Kenya	440	16.5
Nigeria	440	27.2
Mauritania	483	30.4
Lesotho	528	16.6

Source: WDI database, 2006-2007

Table A-5.2: Health Indicators by User Category: DHS 2004 Data

Categories	r_v312	rmeasle	rtt	sanit	prenatal	riron
Poor	37.9	61.8	80.3	45.8	26.2	38.8
Non-Poor	42.4	69.6	87.5	69.2	43.1	54.5
NGO	50.6	70.9	86.7	58.1	36.9	52.8
Non-NGO	35.8	63.2	82.4	56.8	33.1	43.5
Poor-NGO	49.5	69.3	84.1	51.7	31.2	45.4
Poor-NonNGO	32.6	58.5	78.6	43.1	23.9	35.9
Nonpoor-NGO	51.9	72.9	90.1	66.1	44.2	62.4
Nonpoor-NonNGO	38.9	68.4	86.5	70.4	42.7	51.6
All	40.1	65.4	83.7	57.2	34.2	46.2

Source: DHS 2004
Note: r_v312=Contraceptive prevalence rate; rmeasle=Vaccination rate against measles; rtt=TT Injection rate for pregnant mothers; sanit=User of sanitary latrine (extended definition, inclusive of pit latrine); prenatal=Access to prenatal care from skilled health professionals; riron=User of iron tablet/ injection.

Table A-5.3: Determinants of health access and use of services

Indicators/ Correlates	(1)	(2)	(3)	(4)	(5)	(6)
	rmeasle	r_v312	rtt	sanit	prenatal	riron
Leaveout mean for cluster	0.596	0.228	0.411	0.265	0.248	0.163
	(12.26)**	(4.01)**	(7.00)**	(3.22)**	(3.98)**	(2.20)*
Whether poor	-0.036	-0.03	-0.012	-0.067	-0.045	-0.046
	(2.44)*	-1.65	-0.99	(3.38)**	(2.41)*	(2.52)*
Whether NGO member	0.041	0.056	0.027	0.045	0.061	0.112
	(2.68)**	(2.91)**	-1.84	(2.14)*	(3.20)**	(5.91)**
Score of non-land asset	0.015	0.012	0.025	0.083	0.055	0.043
	(2.93)**	-1.76	(4.69)**	(11.79)**	(8.93)**	(6.39)**
Household head education primary	0.032	0.029	0.038	0.055	0.003	0.069
	(2.01)*	-1.34	(2.27)*	(2.29)*	-0.18	(3.11)**
Household head education secondary	0.061	-0.021	0.048	0.137	0.126	0.148

	(3.04)**	-0.87	(2.57)*	(5.73)**	(5.44)**	(6.12)**
Household head education higher	0.037	-0.004	0.052	0.219	0.312	0.328
	-1.34	-0.12	(2.51)*	(6.84)**	(9.36)**	(9.32)**
Household size	-0.008	-0.001	-0.008	0.006	0	0.001
	(3.03)**	-0.38	(3.46)**	(2.09)*	-0.12	-0.29
Woman's current age - respondent	0.055	0.035	-0.006	0.017	0.001	0.012
	(7.75)**	(3.94)**	-0.84	(2.06)*	-0.13	-1.54
Square of current age - respondent	-0.001	-0.001	0	0	0	0
	(6.83)**	(3.74)**	-0.05	(2.44)*	-1	(2.15)*
Region: Barisal	0.001	0.217	0.094	0.043	-0.103	-0.073
	-0.03	(6.18)**	(2.92)**	-0.74	(2.31)*	-1.67
Region: Chittagong	0.004	0.117	0.057	0.024	-0.116	-0.067
	-0.19	(3.85)**	-1.77	-0.47	(2.62)**	-1.7
Region: Dhaka	0.012	0.271	0.065	-0.024	-0.098	-0.085
	-0.67	(7.69)**	(2.12)*	-0.52	(2.20)*	-1.86
Region: Khulna	0.034	0.338	0.021	0.109	-0.067	-0.037
	-1.76	(9.08)**	-0.68	(2.22)*	-1.43	-0.88
Region: Rajshahi	0.025	0.35	0.033	-0.146	-0.081	-0.023
	-1.2	(10.20)**	-1.11	(3.36)**	-1.74	-0.54
Constant	-0.584	-0.447	0.624	-0.132	0.102	0.08
	(5.58)**	(3.37)**	(5.98)**	-1	-0.92	-0.65
Observations	4482	4482	3521	4482	3521	3520
R-squared	0.09	0.09	0.10	0.22	0.14	0.12

Robust t statistics in parentheses (clustered standard error adjusted)
* significant at 5%; ** significant at 1%

Source: DHS 2005 Data
Note: r_v312=Contraceptive prevalence rate; rmeasle=Vaccination rate against measles; rtt=TT Injection rate for pregnant mothers; sanit=User of sanitary latrine (extended definition, inclusive of pit latrine); prenatal=Access to prenatal care from skilled health professionals; riron=User of iron tablet/ injection.

Table A-5.4: The determinants of educational attainment, 2005

	Coefficient	Marginal and impact effects					
		No education/ illiterate	Incomplete primary	Complete primary	Incomplete secondary	Complete secondary	Post secondary
Predicted household expenditure (log)	0.47** *(0.18)*	-0.113	-0.014	-0.022	0.028	0.038	0.083
Age	-0.09** *(0.02)*	0.021	0.003	0.004	-0.005	-0.007	-0.015
Age squared	0.0003 *(0.0006)*	-0.0001	-0.00001	-0.00002	0.00002	0.00003	0.0001
Female†	0.05* *(0.02)*	-0.013	-0.002	-0.002	0.003	0.004	0.010
Urban†	-0.01 *(0.03)*	0.003	0.0003	0.001	-0.001	-0.001	-0.002
Hindu†	-0.12** *(0.04)*	0.031	0.004	0.005	-0.009	-0.010	-0.021

Other religion†	-0.18+	0.046	0.005	0.007	-0.014	-0.015	-0.029
	(0.10)						
Head years of education	0.07**	-0.017	-0.002	-0.003	0.004	0.006	0.012
	(0.01)						
Head salary wage earner†	0.06	-0.014	-0.002	-0.003	0.003	0.005	0.010
	(0.04)						
Head daily wage worker†	-0.30**	0.076	0.009	0.013	-0.023	-0.026	-0.049
	(0.05)						
Head not in the labour force†	0.03	-0.008	-0.001	-0.002	0.002	0.003	0.006
	(0.04)						
Female household head†	0.21**	-0.048	-0.007	-0.011	0.009	0.017	0.040
	(0.07)						
Education of spouse of head	0.05**	-0.011	-0.001	-0.002	0.003	0.004	0.008
	(0.01)						
Spouse of head not in household†	-0.14*	0.034	0.004	0.006	-0.010	-0.011	-0.023
	(0.06)						
Birth order	0.04+	-0.009	-0.001	-0.002	0.002	0.003	0.007
	(0.02)						
Number of children	-0.07**	0.018	0.002	0.003	-0.004	-0.006	-0.013
	(0.02)						
Number of adults	0.10**	-0.023	-0.003	-0.004	0.006	0.008	0.017
	(0.01)						
Total upazila primary schools (00s)	-0.03	0.008	0.001	0.0022	-0.002	-0.003	-0.006
	(0.02)						
Total upazila secondary schools (00s)	0.18**	-0.043	-0.006	-0.008	0.011	0.015	0.032
	(0.06)						
Barishal†	0.20**	-0.045	-0.006	-0.010	0.008	0.016	0.038
	(0.06)						
Chittagong†	0.08*	-0.020	-0.003	-0.004	0.004	0.007	0.015
	(0.03)						
Khulna†	0.23**	-0.051	-0.007	-0.012	0.009	0.018	0.043
	(0.04)						
Rajshahi†	0.16**	-0.037	-0.005	-0.008	0.008	0.013	0.029
	(0.04)						
Sylhet†	-0.18**	0.046	0.005	0.007	-0.014	-0.015	-0.030
	(0.05)						
Observations	16,207						
Endogeneity test	1.27						
Instrument validity test	3.33						
LR test stat pooled v non-pooled	322**						

Notes: 1) Robust standard errors in parentheses; 2) + significant at 10%; * significant at 5%; ** significant at 1%.; 3) † Variable is binary and therefore impact rather than marginal effects are calculated; 4) Endogeneity test is based on Smith and Blundell (1986) ; 5.) Instrument validity test is based on a test of the joint significance of the instruments in a model with the original household expenditure per capita variable.

Annex 6: Poverty, Vulnerability and the Role of Safety Nets

I. The impact of recent rice price increase on household welfare

Rice is the main staple food in Bangladesh. HIES 2005 indicates that all varieties of rice (coarse, medium and fine) accounted for about 24 percent of total household expenditure and 39 percent of total food expenditures. Poor households allocate about a third of household expenditures to rice. The latter part of 2007 saw a very sharp increase in rice prices following floods that damaged the Aus crop and cyclone Sidr that affected the southern and southwestern districts. Increasing global prices further compounded the adversity and retail prices of rice increased by around 38.8 percent in rural areas and 36.8 percent in urban areas from April 2007 to March 2008.

Given the preeminence of rice in household diet and expenditures, a sharp increase in rice prices is likely to have a substantial welfare and distributional impact. Households that are net rice producers would benefit from the improved terms of trade; conversely, net consumers of rice would be adversely affected. Exactly how increased prices would affect poor households would depend on the distribution of net buyers and sellers among them (Deaton, 1989; Ivanic and Martin, 2008). In addition to the impact of price increases, household welfare would also depend on how responsive wages are to such increases (Ravallion, 1990); for example, if wages adjust sufficiently, they would mute the impacts of price increases on households that are net buyers.

Deaton's (1989, 1997) approach is used to estimate the short-run impact of rice price changes on household welfare. The first-order welfare effect of rice price change is proportional to the net benefit ratio (NBR), which is the difference between the production share of rice and consumption share of rice in total expenditures.[1] NBR can thus be interpreted as the elasticity of expenditures (or real income) to rice price change, which also indicates the extent to which a household is a net rice seller (buyer). Multiplying NBR by the change in rice prices yields the instantaneous welfare impact on households. The longer run effects arising from induced wage responses to price changes can be estimated by combining Deaton's model with Ravallion's (1990) approach.[2] The basic model is as follows:

(1) $\Delta w_i = \Delta p\left[\left(PR_i - CR_i\right) + \eta L_i\right]$, where

Δw	=	welfare effect expressed as percentage of total expenditures of household *i*
Δp	=	percentage change of food price change;
PR	=	food production ratio;
CR	=	food expenditure ratio;
η	=	wage rate elasticity with respect to food price change; and
L	=	labor share in household expenditures.

The 38.8 percent rural and 36.8 percent urban increase in retail rice prices between April 2007 and March 2008 is used to calculate welfare impacts, with and without wage adjustments. For wage adjustments, in lieu of using wage elasticity to price changes for which no consensus

[1] We use total expenditures as a proxy for income as expenditures data tend to be a more reliable indicator of household welfare (Deaton 1989; Budd 1993; Barrett and Dorosh, 1996).

[2] Such partial equilibrium analysis abstracts from economy-wide general equilibrium considerations which require modeling within a multi-market framework. While a CGE framework provides more analytical completeness, it also suffers from uncertainties arising from model parameters and distortions caused by the imposition of substantial modeling structure on the problem (Barrett and Dorosh, 1996). We choose the simple partial equilibrium approach in the light of rice's clear dominance in the food consumption basket in Bangladesh and the inelastic nature of its demand.

estimate is available for Bangladesh, nominal wages are assumed to increase by 5 percent for all households.[3] This appears to be a reasonable assumption given recent history – BBS figures suggest that nominal wages increased by 4.5 percent between Fiscal Years 2006 and 2007.

Some important caveats to the analysis must be noted. *Firstly,* this estimation method does not take into account substitution of other types of food for rice in the consumption basket in response to rice price increases. While any substitution would dampen the adverse welfare impact of rice price increase to consumers, it can be argued that because of dietary and cultural reasons, the extent of substitution out of rice is likely to be low in Bangladesh. The fact that wheat prices increased by 30 percent in Bangladesh during this period also reduces the likelihood of substitution of one staple grain for the other.[4] *Secondly*, the welfare impacts estimated here consider a change in rice prices only and not in the prices of other important food and nonfood items in the consumption basket like fuel, animal products and edible oil. *Thirdly*, the estimates indicate the welfare impact on households had they faced a similar a price shock and subsequent wage adjustment in the year 2005. Alternatively, the estimates can be interpreted as the welfare impact of rice price increase on households in mid-2008, *assuming* that the pre-rice price increase distribution of expenditures was unchanged from what was seen in HIES 2005.[5] *Fourthly*, the analysis does not take into account any supply response to rice price increases – an omission that is however likely to be less relevant in the short-run but important in the long-run. *Finally,* any mitigating steps taken by the government, such as the direct sale of limited quantities of rice at lower prices, are not taken into account in the analysis.

The analysis indicates that, in the short run, a majority of households would be adversely affected by rice price increase (Table A). This is a direct result of only 17 percent of households in Bangladesh (including 6 percent of urban households) being net sellers of rice (HIES 2005). Even in rural areas, only 22 percent of households are net rice sellers, which is consistent with the fact that 65 percent of rural households are functionally landless.

In the absence of nominal wage adjustments a 38.8 percent rural and 36.8 percent urban rise in rice prices reduces real expenditures (income) by 4.8 percent for all households (Table A). The impact is more adverse for urban households than for rural households and for the poor than the nonpoor in both urban and rural areas – since the incidence of net sellers is much lower and share of rice in total expenditures higher among the poor than among the nonpoor. Average real income of the bottom quintile declines by 10.5 percent, compared to less than 3 percent for the top two quintiles.

Among occupation groups, only households headed by farmers – less than a fourth of all households and about 30 percent of rural households – benefit from rice price increase, since 52 percent of these households are net rice sellers. The adverse welfare impact is highest among households headed by agricultural and non-agricultural day labor, and lowest among those

[3] Instead of wage elasticity to rice prices, we simply use the change in nominal wage rates for two main reasons. Firstly, for Bangladesh the estimates of wage elasticity are contentious. Ravallion (1990) estimates the short run wage elasticity for agricultural wages in Bangladesh to be 22 percent and the long run wage elasticity to be 47 percent. Using more recent data from Bangladesh, Rashid (2002) argues that since the mid 1980s changes in rice prices have had a negligible impact on agricultural wages. Secondly, to measure the precise welfare impacts of rice prices on households what matters is the change in nominal wages, *not* the change in nominal wages arising from rice price changes.

[4] Rice consumption is also quite inelastic to income. HIES 2000 indicates that households spend 24.7 percent of their total expenditures on rice, roughly equivalent to figures from 2005 (24.3 percent); for poor households also the figures are very similar (33 percent in 2005 as opposed at 31.7 percent in 2000). This stability is noteworthy since during 2000-2005 real per capita expenditures rose at an annual rate of 2.4 percent.

[5] Note that the levels of expenditures (or income) or production do not matter in estimating the welfare changes; as long as the shares of production and expenditure remain reasonably stable, the results would apply to households in 2008.

headed by salaried workers (Table A). This is primarily because salaried workers, who tend to be better off, have a lower share of rice in their total expenditures. Land ownership matters: in rural areas, only households with more than 1.5 acres of cultivable land (roughly 17 percent of all rural households) benefit from rice price increase as a group.

With the assumption of a 5 percent nominal wage increase, the overall adverse impact is reduced: a 38.8 percent rural and 36.8 percent urban rise in rice prices reduces expenditures (income) by 2.9 percent for all households. Poor households suffer severely even after wage adjustments. For example, the expenditures of the bottom quintile group fall by 7.7 percent despite a 5 percent adjustment in nominal wages. The differential impact of rice price increase among different groups is also evident from the wage increases needed for households to be welfare neutral to the rice price increase. While households belonging to the top quintile would on average require around 5.3 percent increase in nominal wages to be as well off as before the price increase, households belonging in the lowest quintile would need a 19.9 percent increase. The wages of agricultural day labor, non-agricultural day labor and salaried workers would need to rise by 19.4, 14.4 and 7.1 percent respectively to counteract the impact of the rice price increase between April 2007 and March 2008.

Table A: Welfare impact of a rice price increase across different household categories

Household category	Share of total number of households (%)	Rice consumption as % of total expenditures (CR)	Rice production as % of total expenditures (PR)	Net Sellers of rice (NBR>0)	Net Benefit Ratio (NBR)	**Estimated Welfare Impact**		Wage increase (%) needed for welfare neutrality
						Without wage response	With wage response (5%)	
All		24.3	11.7	17.2	-12.7	-4.8	-2.9	13.6
Rural	74.6	26.7	14.8	21.6	-11.9	-4.6	-2.8	14.4
Urban	25.4	17.2	2.3	4.2	-14.9	-5.5	-3.1	11.5
By expenditure decile								
Quintile 1		36.1	8.8	8.8	-27.3	-10.5	-7.7	19.9
Quintile 2		30.4	13.1	15.3	-17.3	-6.6	-4.4	17.4
Quintile 3		25.3	13.6	19.4	-11.7	-4.5	-2.5	13.8
Quintile 4		20.2	13.6	22.1	-6.5	-2.5	-0.8	8.6
Quintile 5		12.1	9.0	19.1	-3.1	-1.1	0.3	5.3
By poverty category								
Bottom 10 %	10	38.1	7.3	6.5	-30.8	-11.8	-8.9	20.7
Extreme poor	25.1	35.6	10.0	10.3	-25.5	-9.8	-7.1	19.6
Moderate poor	14.9	29.3	12.6	15.1	-16.7	-6.4	-4.2	17.0
Non-Poor	60	19.1	12.0	20.2	-7.0	-2.7	-1.0	9.5
By net buyer / seller category								
Net buyer	82.8	24.4	3.5	0.0	-20.9	-8.0	-5.8	18.5
Net seller	17.2	23.9	50.7	100.0	26.9	10.4	11.2	-33.8
By main occupation of household head								
Agri day labor	18.1	32.7	7.6	7.2	-25.1	-9.7	-6.7	19.4
Farmer	23.8	26.1	34.2	51.8	8.0	3.1	3.7	1.5
Non-agri day labor	16.8	28.0	3.7	4.4	-24.3	-9.3	-5.6	14.4
Non-agri self-employed	22.9	21.5	6.6	11.2	-14.9	-5.7	-5.0	23.5
Salaried	18.4	16.9	4.8	7.5	-12.1	-4.5	-0.8	7.1

Source: Own calculations from HIES 2005.
Note: Estimated welfare impact calculated by assuming a 38.8 percent rural and 36.8 percent urban increase in rice prices and by assuming wage adjustment to be 5 percent.

Table B indicates how the adverse impact on real expenditures translates to changes in poverty estimates. Notably, these estimates simulate the impact on the "baseline" poverty situation in 2005, and *do not take into account* the poverty reduction that would have taken place during 2005-2008 due to the economic growth during that period. Notwithstanding this caveat, a few clear messages appear from these estimates.

Firstly, the impact of rice price shocks on poverty indicators can be quite large, due to the large real expenditure/income impact and the clustering of the population around the poverty line. With the baseline poverty and extreme headcount rate (HCR) of 2005, a 38.8 percent rural and a 36.8 percent urban increase in rice prices would increase poverty HCR and extreme poverty HCR by 5 and 6 percentage points respectively in the *absence of any wage adjustment*. With a 5 percent nominal wage adjustment, the corresponding figures are 3 and 4 percentage points. *Secondly*, the estimated increases in extreme poverty rate, poverty gap and squared poverty gap (not shown here) are higher than in HCRs. This implies that: (i) the poorest households bear the biggest brunt of the impact; and (ii) the proportionate decline in welfare and worsening of distribution *among* the poor is higher than that in the increase in the number of the poor. Consistent with this, the Gini index of inequality in per capita expenditures is estimated to increase by around 3.7 percent due to the rice price shock. This is attributable to the fact that the welfare impact is skewed against the poor and the positive benefits go in favor of relatively better off farmers (especially those with land in excess of 1.5 acres).

Table B: Impact of a rice price increase on national poverty indicators

	Without wage response	With wage response (5%)	With wage response (10%)
Poverty HCR[1]	4.6	2.6	0.9
Extreme poverty HCR[1]	5.7	4.0	2.5
Gini index[2]	5.2	4.4	3.7

Source: Own calculations from HIES 2005
(1): Percentage *point* increase; (2): % increase

II. The IFPRI panel study

Design of the survey

The study involved re-surveying a sample of households in 102 villages located in 14 districts who were interviewed as part of a baseline survey between 1994 and 2000. The baseline survey comprised of three separate surveys – since they were designed and implemented as separate studies to study the impacts of three different policy interventions occurring at different sites, namely microfinance (henceforth known as *MF sites*), agriculture/fishing technologies (*AT sites*) and educational transfers (*ET sites*). Thus the timing of the baseline round differs across study sites: June-July 1994 for the MF sites, June-September 1996 for the AT sites, and September-October 2000 for the ET sites.

These districts and villages were selected to span the range of agro-ecological conditions found in rural Bangladesh and, while the sample *cannot be described as representative of rural Bangladesh in a statistical sense*, it broadly characterizes the variability of livelihoods found in rural Bangladesh. The most recent follow-up survey, conducted in 2006-07, was done on a sample of 1,787 households who were core households from the original survey plus 365 households who were "splits" from the original household. The survey was complemented by a qualitative study designed to examine perceptions of changes from women and men in a sub-sample of the survey communities.

Identifying "shocks" in the IFPRI longitudinal study

The "shocks" module in the IFPRI panel is modified for the Bangladeshi context from a similar module developed in Hoddinott and Quisumbing (2003). The module asks households to consider a list of adverse events and indicate whether the household was adversely affected by them. Agroclimatic shocks include flooding, and erosion and pestilence affecting crops or livestock. Economic shocks include asset or property losses (not due to theft), but owing to river erosion, eviction, fires, or other reasons. Political/social/legal shocks include extortion by mastans (organized crime syndicates), court cases and bribery, as well as long duration hartals (general strikes) and political unrest. Crime shocks include the theft and/or destruction of crops, livestock, housing, tools or household durables as well as crimes against persons. Health shocks include both death and illness/injury – distinguishing between death of the primary income earner and death of other household members, and disaggregating illness shock into loss of income foregone and the medical expenses resulting from illness/injury. Life cycle shocks include dowry payments, wedding-related expenses, and property division (usually upon the death of the father in a cross-generational household). In addition to these specific shocks, households were also asked to enumerate the three most important adverse shocks that they had experienced since the last survey.

III. A few lessons from existing public works programs

Experiences with existing public works programs suggest some principles of success, some of which outlined below.

- *Wage rates should be determined by the local market wage for unskilled labor.* While higher wages can have positive effect on transfer benefits, and sometimes on the market wage, these must be weighed against potential adverse effects. Higher wages can reduce the self-selection feature of a program – namely the feature that better-off households will not have the incentive to participate in the program – and deter employment generation by driving up wages in the private sector labor market.
- *Wage rates should also be consistent with budgetary resources.* For example, in Maharashtra's (India) long-standing Employment Guarantee Scheme (EGS), the feature of employment guarantee may have been undermined by the increase in wage rates in 1988, when the average EGS wage became higher than market wages and were not accompanied by commensurate expansion in budget. Ravallion et al found that average monthly expenditures on EGS actually fell after the increase in wages, and employment fell by one-third, suggesting some rationing in employment. Wage schedules should also be gender neutral (not discriminate against women). Certain kinds of wage structures (like piece rates) can facilitate the participation of women, as can features like local work sites and childcare facilities.[6]
- *Labor intensity for public works projects should be higher than the local norm for similar projects.* In this context, minimizing possible conflict between objectives of workfare programs would be important. Such conflicts may engender tradeoffs between high labor intensity and efficient infrastructure investments, which need to be taken into account for program design.
- *Risk mitigation benefits are high when there is credible availability of the program during times of need.* Making the program available at all times, expanding automatically during

[6] For discussions on women's participation in workfare programs, see Deolalikar and Gaiha (1993b)

crisis when demand is high (as is the case with EGS) will maximize risk mitigation. In case of programs that operate mostly in lean seasons, a history of successful operation can create the credibility among the poor necessary to mitigate risk.

- *Delivery of benefits, as well as cost-effectiveness can be improved by effective organization at the local level*. Briefly, this would involve strengthening local governments, building their capacity to implement the project efficiently and increasing their accountability to local communities. Many of the shortcomings of programs like Bangladesh's own FFW and India's NREG, for example, can be traced to inadequacies in local implementing authorities.
- *Closely related to the above is the need to encourage the creation and participation of coalitions of the poor that empower them*, like labor unions or community-based organizations, which can improve accountability of implementing agencies and reduce leakage from corruption and administrative malpractice. Delivery of benefits from EGS is seen to have improved markedly with the participation of voluntary organizations, as Deshpande (1988) shows in his study on Jawahar Taluka of Thane.
- *Geographic targeting could also enhance a workfare program's impact*, whereby regions with large concentrations of vulnerable groups can be identified for program allocations.
- *A statutory guarantee of employment can be beneficial*, an example for which is EGS. Such a feature can empower the poor by creating a sense of entitlement among them, enhances insurance benefits to the poor, often allows scarce resources to go to the poorest first (albeit only to those able to work), and reduces some of the possibilities of corruption (Ravallion et al, 1993).

Public works programs are important policy measures to reduce vulnerability, especially in the context of South Asian countries with large informal sectors, where the level of institutional development limits the outreach of formal safety nets. It is also important, however, to remember that public works programs do not reduce vulnerability from all sources, nor are they able to reach such vulnerable groups as the old, the infirm and children. Other programs that target vulnerability of the poor are thus needed as complements.

Box A-6.1: The National Rural Employment Guarantee scheme in India

The National Rural Employment Guarantee Act (NREGA), passed by the Indian parliament in 2005, aims to enhance the livelihood security of households in rural areas of the country by providing guaranteed wage employment to every household with an adult willing to do casual labor at the minimum wage, subject to a limit of 100 days per household per year. There are few parallels to such a program in the world, with Argentina probably coming the closest with an employment scheme that was introduced to mitigate the impact of an economic crisis in 2002.[7] NREGA has many important distinguishing features, the most important among which is the guarantee of work backed by legislation. A second important feature relevant for other countries to emulate concerns measures to improve transparency and accountability – for example the introduction of a photographic identity card (Job Card) to identify beneficiaries and track employment and payments; the stipulation to maintain detailed records including muster rolls and registration records; the use of social audits for monitoring and vigilance; and the stipulation to comply with the recently enacted Right to Information (RTI) Act, by responding to all requests from citizens for documentation and through a policy of "proactive disclosure" of all key documents. A third important feature concerns the phased introduction of the program – piloted first in 100 poorest districts of India, the program has now expanded to cover more than half the country.

A rigorous impact evaluation of NREGA is still awaited, with the World Bank having initiated a study intended to address this need. However, evidence from a number of sources suggests a mixed experience,

[7] This was a more limited intervention than the NREGA, focusing on municipal areas, though it covered a wider range of activities and has since been redesigned to focus on more narrow objectives.

with successes as well as areas in need of improvements along a number of dimensions. On the positive side, the program has achieved impressive scale. The Ministry of Rural Development (Government of India) data for 2006-07 suggests that out of 21.6 million households who sought employment, 97 percent were provided work averaging 45 days in the year, with high participation among women, scheduled castes and scheduled tribes. Unskilled wages comprised 67 per cent of the total expenditure, and 94 per cent of the expenditure on wages. A recent paper (Mathur 2007) mentions a number of positive aspects of the NREGA experience so far, some of which are: large numbers of registration among poor households; completion of registration and maintenance of muster rolls in many districts; reduction in distress migration from villages in several states; increase in the participation of women in some districts; mobilization of the poor in many parts of the country; and effective utilization of the RTI Act in several cases.

But even piecemeal and/or aggregated evidence suggest a number of serious shortcomings. On a macro scale, the wide variation in the program's performance across states is a cause for concern. Important indicators like utilization of budget per district, person days of employment per district and number of households provided employment were much higher in states like Madhya Pradesh, Orissa, Chhattisgarh and Rajasthan compared to states like Gujarat and Maharashtra.[8] A number of reports, particularly from social audits, have also emerged on irregularities of various types, including delays, corruption, leakage and administrative problems.[9] The aforementioned paper also urges attention/action along a number of fronts, including the need for more active participation of the rural poor; clearer understanding among government officials and administration of their responsibilities; the mainstreaming of the panchayats to deliver in a situation where most have limited capacity and experience; and improved partnerships between officials, panchayats and the stakeholders of the program.

The vast potential of NREGA is hinted in the findings from studies with limited coverage, for example the surveys in the Batauli block of Surguja district of Chhatisgarh (regarded as one of India's poorest districts) conducted by students of two Indian universities.[10] Their latest survey (2007) found major improvements with regard to job cards distribution, levels of employment, payment of wages, or quality of the various works – compared to the extremely poor situation they had found the previous year. For example, a high degree of accuracy in muster rolls indicated that leakages have been reduced to 5 per cent, compared to 50 per cent a year ago. At the same time, a number of areas still needed improvements, including widespread ignorance in the region about the availability of such employment and persistent delays in the payment of wages (contrary to the law that guarantees that workers are paid within 15 days).

[8] These statistics are reported by Mathur (2007). See this paper for more detailed figures.

[9] See, for example, findings from social audits referred to in "NREGA: Dismantling the contractor raj" by Jean Drèze (The Hindu, November 20 2007); "Long road to employment guarantee" by Jean Drèze and Sowmya Kidambi (The Hindu, August 7 2007)

[10] The survey results are reported briefly in a newspaper article by Pamela Philipose (Indian Express) <http://www.indianexpress.com/story/203045.html>

IV. Tables and figures referred to in main text

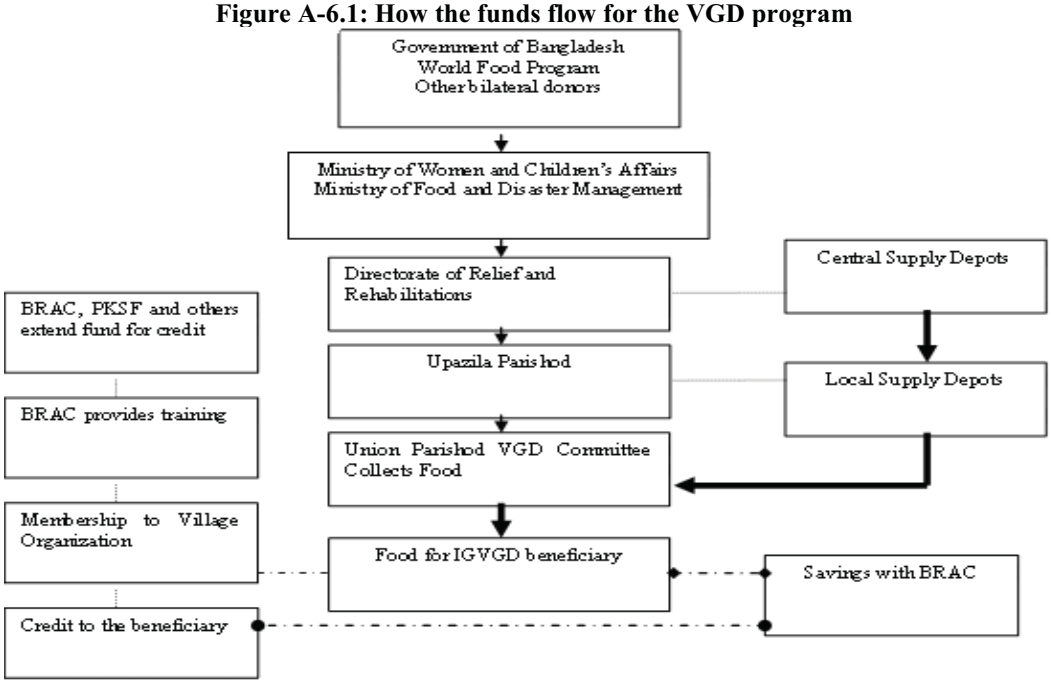
Table A-6.1: Household self-reports of shocks experienced in the last 10 years (1997-2006/2007)			
Most commonly reported shocks	*Microfinance sites*	*Agricultural technology sites*	*Educational transfers sites*
Dowry and wedding expenses	0.23	0.16	0.18
Expenses related to illness or injury of a family member	0.16	0.19	0.16
Loss of income due to illness or injury	0.06	0.05	0.06
Floods (damage, loss of crops, loss of assets)	0.13	0.13	0.13
Livestock deaths	0.09	0.10	0.08
Crop losses unrelated to floods	0.08	0.07	0.07
Legal and policy shocks (court cases)	0.07	0.09	0.09
Loss of assistance or transfer from family/NGO/ govt.	0.01	0.01	0.08
Asset losses	0.03	0.03	0.04
Theft and crime	0.02	0.04	0.03
House losses	0.01	0.00	0.01
Job losses	0.00	0.00	0.01
Death of main income earner	0.02	0.02	0.01
Death of other family member	0.03	0.01	0.02
Division of father's property	0.00	0.00	0.00

Source:

Table A-6.2: Participation in safety net programs by division and consumption group (%)							
Division	**Lowest Quintile**	**Quintile 2**	**Quintile 3**	**Quintile 4**	**Quintile 5**	**Total**	**Lowest Decile**
Barisal	14.6	7.3	4.9	5.6	0.9	7.7	**14.8**
Chittagong	21.7	11.2	7.6	8.1	2.7	8.9	**27.5**
Dhaka	19.5	15.8	13.6	8.3	2.9	10.2	**19.2**
Khulna	11.0	8.7	5.4	5.9	3.2	7.1	**15.0**
Rajshahi	21.5	12.9	8.0	5.3	2.0	11.3	**22.9**
Sylhet	31.4	24.8	24.9	12.6	5.2	18.0	**40.8**
Total	**19.1**	**13.1**	**10.0**	**7.4**	**2.8**	**10.2**	**20.7**

Source: HIES (2005)

Figure A-6.1: How the funds flow for the VGD program



Source: Ahmed (2005)

Table C
Key Safety Net Programs: Objectives and Beneficiary Selection Criteria

Name of the Program	Purpose	Targeting Criteria	Financed by and Implementing Ministry	Nature of Benefit/ Planned Coverage/ Delivery Mechanism
Vulnerable Group Feeding (VGF)	To provide food and other emergency assistance to disaster victims	Disaster victims	GOB DPs / MFDM	10KGs rice for 8 months/ 5,000,000 persons/ Food (usually wheat)
Gratuitous Relief (GR)	To provide food and other short term emergency assistance to disaster victims	Disaster victims	GOB DPs / MFDM	10KGs rice variable period/ 6,400,000/ Union Parishad
Test Relief (Rural Infrastructure Maintenance Program) (TR)	1. Employment generation for the poverty stricken people in rainy season 2. Developing and maintaining rural infrastructure	Geographic targeting	GOB DPs / MFDM	5-6KGs of wheat per day for a month during rainy season/ 1,700,000/ Union Parishad
Vulnerable Group Development (VGD)	1. Developing life skills for women through training, motivating savings and providing scope for availing credit 2. Monthly in-kind income transfer	1. Households with not more than 15 acres of land 2. Households with income less than Tk. 300 dependent upon seasonal wage employment 3. Adult women below 50 4. Day labor /temporary worker 5. Households with little or no productive assets	GOB WFP EC CIDA / MWCA	30KG wheat and training/ 200,000 MT Wheat Union Parishad and NGO

Allowance to the Widowed, Deserted and Destitute Women	Income support for a vulnerable group	1. Women either widowed, deserted or destitute 2. The number of beneficiaries identified on the basis of the category of union	GOB / MWCA	Tk. 220 per month/ 825,000/ Bank
Honorarium Program for the Insolvent Freedom Fighters	Livelihood support to poor freedom fighters through cash transfers	1. Freedom fighter's identity verifiable in cross section of references 2. Freedom fighters with income <Tk. 6000 per year 3. Disabled or partially disabled or landless or unemployed or none in the family to depend upon 4. Landless 5. Not beneficiary of other programs	GOB / MFFA	Tk. 600 per month 100,000/ Bank
Old Age Allowances	Livelihood support to the elderly poor	1. At least 65 years of age 2. Income equal to Tk. 2000 3. Must have worked in formal sector 4. Number of beneficiaries is determined on the basis of category union 5. 50% of beneficiaries women	GOB / MSW	Tk. 220 per month 1,700,00/ Bank
Food For Work (FFW) (and Cash for Work)	1. Employment generation for the poor in slack season 2. Developing and maintaining rural infrastructure	1. People who are functionally landless 2. People who lack productive resources 3. Women headed household where women are widowed, deserted, and destitute 4. Day labor or temporary workers 5. People with income less than Tk. 300 per month	GOB ADB WFP / MLGD MSW MWR	Quantity of Work Done/ 2,247,000 man month/ Food (Usually wheat)
Primary Education Stipend Project (PESP)	1. Increasing number of primary school enrolments from poor family 2. Increasing school attendance and reducing dropouts 3. Increasing primary school completion rate 4. Reducing child labor and poverty	1. Children from female headed households where head of the household is widowed, deserted and destitute 2. Children from households where head of the households are day labors 3. Family of low income professionals (like: fishing, pottery, blacksmith, weaving, and cobbling) 4. Landless or households that own <.5 acres of land	GOB / MPME	Tk. 100 -125/ 5,500,000 students/ Bank
Female Secondary School Assistance Program (FSSAP)	1. Increasing student enrolments at secondary schools 2. Reducing frequency of under age marriage	All unmarried girl students studying in recognized institutions at secondary level	GOB DFID/ DSHE MOE	Tk. 300 -720 and other cash benefits/ 3,000,000 students/ Bank

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